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ABSTRACT

The two volume final report of the South Dakota Statewide Core Curriculum, Career Ladder, and Challenge System Project, coordinating associated health and nursing education on a statewide basis to achieve a more systematic production and utilization of health manpower, is presented. Volume 1 includes five chapters: (1) and (2) outlining funding mechanism and contractual obligations; (3) discussing background information, methodology, and problems; (4) discussing activities and results; and (5) presenting future plans and evaluation. Primary and secondary core curricula and accompanying tests, career mobility options, and performance objectives were developed by the Health Manpower Council, formed by associated health and nursing programs throughout the State. An implementation study determined that out of 65 programs, 10 institutions would offer the primary core curricula to some 18 different programs in 1975, with use of the secondary core curricula difficult to determine. Little impact has been felt in the distribution of health workers. Volume 2 (over 300 pages) consists of appendixes, and includes: organizational data (personnel, cooperating institutions, visitations, and meetings); topical outlines of 22 course areas; topical outlines and performance objectives for primary and secondary core curricula; mean degree of performance objectives by program type; program implementation information; and other project-related materials. (LH)

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FINAL REPORT - VOLUME I

of the
SOUTH DAKOTA STATEWIDE CORE CURRICULUM, CAREER LADDER AND CHALLENGE SYSTEM

for the period of
June 21, 1971 - June 20, 1975

Donald G. Brekke, Director
Wayne M. Gildseth, Associate Director

Funded by

Bureau of Health Manpower, Division of Associated Health Professions, Health Resources Administration, U.S. Public Health Service, Department of Health, Education and Welfare (Contract No. N01 AH 14158)

and

South Dakota Regional Medical Program

Date of Report: September 10, 1975

U.S. DEPARTMENT OF HEALTH,
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PREFACE

This Final Report describes the inception, birth, adolescence, and early adulthood of the life of the South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project. Other aliases include the Core Curriculum Project or simply the Project. The life of the Project, like the lives of most persons, has been comprised of struggle, tedium, sorrow, dreams fulfilled and dreams unfulfilled, excitement, mistakes, and occasionally levity. It is expected that most of those who have been privileged to work with the Project would agree that it has been a worthwhile, enlightening and rewarding experience.

Parts I and II of this Report will outline the funding mechanism and contractual obligations of the Project. A history of the Project including its methodology and problems has been included in Part III. A reading of Part III should provide sufficient detail to acquaint someone with the goals, activities, and experiences of the Project. For those who wish to pursue the activities and results of the Project more thoroughly, a technical section, Part IV, has been written. Finally, the dreams and plans of the Project for its later adulthood and ultimately its retirement, together with a reminiscence (evaluation) of its life thus far are presented in Part V.

The Project staff wishes to take this opportunity to thank all those persons who have in any way made this Final Report possible. There is no doubt that the benefits and dedication of this Project and Final Report must be to the South Dakota associated health and nursing students and to the thousands of persons they will serve in the years to come.

The Project will continue via a Contract with the Bureau of Health Resources Development, U.S. Public Health Service, Region VIII for the period June 21, 1975 through June 20, 1977. Supplemental support has also been received from the South Dakota Regional Medical Program for the period July 1, 1975 through June 30, 1976.

I. INTRODUCTION[1]

Among the 50 states, South Dakota is 16th in size, 45th in population and 49th in physician-to-patient ratio. The latter statistic is indicative of prevailing health care problems in the rural-and-reservation commonwealth where considerable distances often separate citizens from limited treatment facilities and trained personnel. (In 1974, 16 of the state's 64 counties had no doctors and 20 counties were without a functioning hospital.[2])

Analysis also has revealed that in addition to the physician-to-patient disparity, there is possibly a shortage of associated health and nursing specialists, further complicated by maldistribution of such individuals who are disproportionately concentrated in and around cities and educational centers.

To overcome these various shortcomings, South Dakota governmental agencies, health care providers and concerned consumers have begun a multi-faceted attack on the overall problem. One element of the effort has been a survey of the training/education system which produces associated health and nursing manpower in the state - and an outgrowth of that study has been the development of a Core Curriculum, Career Ladder and Challenge System which is unique in its scope and approach.

This report traces the South Dakota project from genesis to the first stages of implementation. The activity is on-going, not all the results are in, but after four years of patient persistence on the part of those involved, it has reached a point where a review of the process and its accomplishments to date is warranted for the possible benefit of others who might have interest in a similar undertaking.

The growing health manpower dilemma in South Dakota demanded action; and in 1967, the first specific efforts to define the problem and to seek solutions were begun.

With much individual leadership provided by Robert H. Hayes, M.D. (then director of the South Dakota Regional Medical Program and later State Secretary for Health), preliminary discussions among health leaders and educators were generated to bring the somewhat blurry manpower picture into focus. At the same time, SDRMP and the South Dakota Comprehensive Health Planning Agency cooperatively pooled resources to approach the matter jointly.

After several meetings, it became apparent that progress would be impeded without some full-time management; and in July of 1970, a Coordinator of Health Manpower Development for South Dakota (Donald G. Brekke) was appointed. The newly created position was funded mutually by the South Dakota Regional Medical Program and the South Dakota Comprehensive Health Planning Agency.

During this period, the "core curriculum" or "shared knowledge" concept for associated health education was being implemented in a number of individual institutions throughout the United States; and the pros and cons of the core philosophy were widely discussed. A paper titled "Core Curriculum in Allied Health Education" (read by Joseph Hamburg, M.D., of the University of Kentucky Medical Center at the 65th annual Congress on Medical Education) proposed that "the development of...a common educational base for the allied health professions would seem to permit greater career mobility vertically and laterally than has heretofore existed."[3] Such mobility was one of the major objectives being considered in South Dakota; and while the manpower coordinator was developing a statewide inventory of trained personnel, county health care profiles and other basic planning tools, the core curriculum idea grew in interest among the agencies and individuals involved.

At that particular time, 26 different institutions in South Dakota offered 54 accredited health career training programs, with still others on the academic drawing boards. In general, these proliferating programs had little relationship one to the other, and there was no overall plan to govern their development. The need to make the most efficient and effective use of the state's limited educational dollars (both private and public) led to the active consideration of a core curriculum project as a possible way to coordinate associated health and nursing education on a statewide basis and thus to achieve more systematic production and utilization of health manpower.

An initiatory plan was outlined and discussed with interested educators, health leaders and federal officials, including Gunnar E. Sydow, D.D.S., M.P.H., Director of Region VIII, Division of Health Resources Development, who lent an encouraging ear to the idea. The opportunity to test the core curriculum concept in a pilot project across a broad spectrum of programs and institutions (hospitals, colleges and vocational-technical schools) was intriguing; and on June 21, 1971, a two-year contract (No. NIH 71-4158) was awarded to the South Dakota State Department of Health by the Bureau of Health Manpower Education, National Institutes of Health, Public Health Service, Department of Health, Education and Welfare. This contract transformed the project from thought to inception, and the state health manpower coordinator was assigned the responsibility for achieving the seven scope of work objectives delineated in the application.

The June 21, 1971 - June 20, 1973 Contract was extended with additional funding for two years from June 21, 1973 to June 20, 1975 under the sponsorship of the Division of Allied Health Manpower and became Contract No. N01 AH 14158 from the Health Resources Administration, Bureau of Health Resources Development.

Since its inception, the Core Curriculum Project has also been co-sponsored by the South Dakota Regional Medical Program (SDRMP) and the South Dakota Comprehensive Health Planning Agency (SDCHP). The SDRMP has provided supplemental funding for specific Project activities, e.g., staff and secretarial support, annual Health Manpower Task Force Workshops and achievement test development.

This Final Report is being prepared in accordance with Article I. Scope of Work B.2. on pages 4 and 5 of Contract No. N01 AH 14158 subject to an extension of this contract, without additional funding, until September 20, 1975.

II. SUMMARY OF CONTRACT

A. GENERAL INTENT AND PURPOSE OF CONTRACT

Contract No. N01 AH 14158 was issued for the purposes of developing a statewide core curriculum for health manpower training programs in South Dakota and a mechanism for obtaining acceptance of this curriculum by the educational community in the state.

B. CONTRACTUAL REQUIREMENTS

In pursuance of the general purpose and intent of the Contract, specific scope of work items were included in Contract No. N01 AH 14158. The specific scope of work items are reproduced in Appendix A.

III. HISTORY, METHODOLOGY AND PROBLEMS

A. INTRODUCTION[1]

Changing traditional practices in any industry, art or profession can be a difficult, often frustrating process. Entrenched practitioners understandably are protective, wary, jealous of prerogatives and skeptical of innovation.

Accordingly, the introduction of the core curriculum concept to the health training institutions in South Dakota was greeted by some as an unnecessary and unworkable "rocking of the boat" which hitherto had floated along seemingly without too much trouble. As a result, when the state health manpower coordinator made his very first visit to a teaching institution to explain the proposed endeavor, he was told politely but firmly that - for a variety of reasons (and excuses) - the project would never "get off the ground."

This initial negative reaction served as a challenge rather than a deflating blow; and as the interviews progressed from one institution to another, it became obvious that for the concept to be broadly accepted, an extended period of communication, education and "soft sell" would be necessary to overcome natural reticences. The result was a fundamental policy decision. *No attempt would be made to apply any kind of pressure or authoritarian demands on institutions or individual educators.* For the system to work effectively, it would have to evolve strictly on the basis of merit and not leverage.

When President Gerald R. Ford spoke to the United States Congress on August 12, 1974, he promised a relationship based on "communication, conciliation, compromise and cooperation." With those four words, he could well have been describing the process by which the South Dakota Core Curriculum Project was patiently nurtured into existence. Throughout the latter half of 1971 and much of 1972, the coordinator laid the groundwork for broad participation by personally visiting all 26 of the institutions in which health career courses were taught, meeting the directors and faculty members, obtaining facts about the various programs and urging appointments of representatives to the Health Manpower Council.

B. HEALTH MANPOWER COUNCIL[1]

The Health Manpower Council was the initial vehicle by which the project leaders planned to foster democratic input and decision-making. The HMC - as the council quickly came to be known - was formed on the basis of one representative from each of the state's health manpower training/education programs which award certificates, diplomas, degrees or other official credentials. An educational institution or health facility with more than one program was entitled to representation for each separate training activity, and each council member was granted one vote. (The HMC also had other members from health groups, governmental agencies, etc.)

Furthermore, it was stressed from the beginning that the HMC would be strictly a voluntary association with neither the authority nor responsibility for trespassing on institutional prerogatives. For example, an institution would be able to reject any of the council's recommendations or to accept one, a few or all of them. Moreover, a program could withdraw its membership at any time.

Though the preliminary contacts required a great amount of time, travel and patient persuasion to give the Health Manpower Council a realistic opportunity to function successfully, a positive response began to develop across the state. (In describing his discussions with some of the more cautious educators, the director said, *"There were many times when I had to idle my motor when I felt like stripping my gears."*) Support for the concept ranged from great enthusiasm to a "what have I got to lose" testing attitude. In time, *all* appropriate training programs agreed to participate in developmental meetings of the HMC, and the stage was set for the next phase of the project plan.

Meanwhile, the director had not limited his informational contacts to educational institutions. He explained the philosophy to representatives of such organizations as the State Board of Regents, the Division of Vocational Education, the State Planning Agency, the South Dakota Medical Association, the State Nurses' Association, the Board of Nursing, the South Dakota Hospital Association and various other health-oriented agencies and groups. State legislators and other private citizens with particular interest in the health care field were also contacted. The purpose for these preparatory visitations, of course, was to achieve across-the-board awareness of the project and its aims among all organizations and individuals who would or should be involved. The work was time consuming and tedious, but it paid off when the HMC was activated and the task of defining and building a core curriculum actually began.

As one staff member put it: "According to the old adage, you supposedly can lead horses to water, but it's difficult to make them drink. In this case, frankly, we also had to persuade them to come to the tank so the *real* imbibing could take place."

Initially, the Health Manpower Council was divided into eight subcommittees according to the following types of programs:

1. Medical Laboratory
2. Nursing Programs
3. Radiologic Technology
4. Dental Programs
5. Medicine and Pharmacy
6. Medical Assistant and Medical Secretary
7. Anesthesia, Inhalation Therapy, and Nurse Anesthesist
8. Dietician, Dietetic Technician, Nursing Home Administration, and Physical Therapy

The eight subcommittees were charged with compiling:

1. The educational philosophy of each associated health and nursing program;
2. Program entrance requirements and expected student outcomes, and
3. Curricular content of each program, both professional and supportive.

A number of these subcommittee meetings were held, and they proved to be beneficial in establishing better communication, meeting the above objectives, and in identifying the associated health and nursing educational leaders in South Dakota. Furthermore, with the help of consultants, the desired compilations were eventually prepared. Though not published because of their confidential nature, they have provided resource data for various Project activities.

During the past two years, it has been necessary to convene subcommittee meetings and workshops for core curriculum and achievement test development in which the participants are selected from a variety of health occupations programs and diverse academic disciplines.

Also, during the past two years, additional members from various state agencies and health organizations have been added to the Health Manpower Council (HMC) which was renamed the Health Manpower Task Force (HMTF). Further changes in the membership of the HMTF will occur in the fall of 1975 when the HMTF is enlarged to serve as an Advisory Group for both the Core Curriculum Project and the South Dakota Health Manpower (Linkage) Project.

C. DEVELOPMENT OF THE CORE CURRICULUM[1]

To alleviate fears of educators and certain health professionals, it was important right from the beginning to emphasize strongly that the South Dakota core curriculum was *NOT* to be "planned in advance" by some higher authority and that it was *NOT* to be designed to require all faculty members in all schools to teach identical courses like pedagogical robots.

Conversely, a major aim of core was and is to retain the different nuances and presentations of individual instructors while at the same time providing bridges to connect the various programs and schools for the ultimate benefit of the student if and when he needs or wants such a span in pursuit of his personal career goals which may very well change as he broadens his experience.

In activating the Core Curriculum Project, there was considerable concern about proper juxtaposition of cart and horse. Accordingly, it was decided that the Project staff - in the role of a "neutral catalyst" - should provide only limited direction at the outset in order to assure Health Manpower Council members that the ultimate product would truly be their work. It was emphasized that they would not be called together merely to rubber-stamp a preconceived package, but that they would indeed create the core curriculum themselves.

The major problem, of course, was to inventory all the health career programs in the state, to break them down in terms of "tasks, skills, knowledge and attitudes;" and then to determine the commonalities around which a core curriculum could be built. To prepare for that obviously extensive and detailed job, the first general meeting of the HMC was held on September 27, 1971, to chart the course for action.

More than 70 representatives from educational institutions, health care facilities and related agencies throughout South Dakota were in attendance. A panel of speakers discussed the concept of core curriculum and career mobility from a variety of angles:

+ the need to seek economies and efficiency in the training process and to avoid overlapping;
+ the importance of both lateral and vertical mobility to retain capable personnel in the health field and to sustain their enthusiasm for their work;
+ the advantages of cross-fertilization of ideas by exposing educators and students from different fields to one another;
+ the desirability of bringing health manpower development under some form of planning apparatus rather than permitting programs to proliferate with little relationship to need or coordination with other elements of the health care team;
+ recognition of the growing demands of consumers and students for more than lip service regarding the health delivery system and the preparation necessary to become a productive part of that system.

The enthusiastic interest in further involvement in the Core Curriculum Project evidenced by participants at the first HMC meeting pinpointed an impending functional problem. It was obvious that the council would be too large and unwieldy for efficient work sessions unless it were broken down into smaller units. Consequently, eight subcommittees were designated as described earlier.

(Because members of the HMC subcommittees were busy people whose commitment to the Core Curriculum Project was primarily voluntary, it was decided later to supplement their work with research by Project staffers and paid consultants in order to avoid a considerable time lag and the resultant loss of momentum.)

In the meantime, the Project staff also completed the inventory of health manpower training programs in South Dakota and published a directory. Additionally, in preparation for the next phase of the developmental process; contact was made with the Allied Health Profession's Project conducted by the Division of Vocational Education at the University of California at Los Angeles. The purpose of the liaison, of course, was to capitalize on the knowledge and experience already gained by the federally funded AHPP relative to core curriculum. (AHPP representatives later contributed generously to workshop sessions of the South Dakota Project. Key AHPP consultants to the Project have been Miles Anderson, Jerry Epstein, Thomas Freeland, Howard Taub and Lucille Wood.)

The state coordinator continued efforts to broaden participation and interest in the program. The South Dakota League for Nursing requested the Project office to provide materials on health careers for a display booth at the 1971 South Dakota State Fair, and an estimated 20,000 people viewed a colored slide presentation and picked up informative brochures. In December, 1971, the details of the core curriculum activity were presented at a meeting of deans and/or vice presidents for academic affairs from the state's institutions of higher education, both public and private. Because of their key roles in curricular affairs, it was considered extremely important to keep them informed of the philosophy, rationale and progress of the Project.

Numerous skeptics had predicted that South Dakota's attempted core curriculum for allied health and nursing education would never get beyond the preliminary jawboning stage; by mid-1972, however, the Project not only was alive and well, but it was ready to move from theory to reality.

Because associated health and nursing occupations encompass such a broad spectrum of knowledge and task proficiency, determination of the commonalities among the occupational specialties necessitated the segregation and analysis of each of the hundreds of training/education requisites involved.

It should be pointed out here that the South Dakota Project ran into numerous semantic hurdles and inter-occupational prejudices - as was expected - and these had to be considered and respected in order to keep the program from degenerating into a giant nit-picking contest.

Baccalaureate program representatives objected to the use of "training" as opposed to "education" in describing their teaching efforts; nurses balked at being included under the "associated health occupations" label; concern was expressed by some educators that a health career core curriculum on a statewide level would be too task-oriented, too "vocational"; and vocational instructors reacted to the inclusion of what they considered to be academic non-essentials.

It became the responsibility of the Project coordinator and his staff members to mollify the diverse-thinking, often vociferous individuals sufficiently enough to get them together to exchange views and seek compatibilities rather than to perpetuate and expand differences.

There was another factor which also required kid-glove treatment. Most HMTF members were impatient to move ahead. Many wanted to discuss implementation even before the theory was clearly established. Visualization of the concept and its application varied greatly among participants, all of which hampered adherence to the plan for a systematic stage-by-stage development. "Too many of us wanted to look down the wrong end of the telescope" was the way one council member described the situation.

A public relations approach prevailed, however, and council members were brought together for their first major workshop on September 14-16, 1972, at a Black Hills lodge where they were somewhat cloistered and freed from distraction. The purpose of the meeting was to introduce the HMTF to the next phase in the evolution of the core curriculum; the inventorying and analysis of the tasks involved in the various health-care occupations; and preparation of behavioral or performance objectives to govern the teaching of skills and knowledge necessary to perform those tasks.

With experienced consultants conducting the work sessions, participants were made aware of (and actually practiced) a standardized system of task analysis and objectives-writing. They were reminded that an objective is the desired measurable performance expected of a learner and that it is not an end in itself but must lead to a student-oriented goal. Furthermore, it was emphasized that with clear-cut objectives it was possible for:

1. *Teachers* to determine the effectiveness of their instruction through student progress;
2. *Students* to know exactly what is expected of them;
3. *Administrators* to evaluate teachers by observation, and
4. *The Public* to judge the effectiveness of the educational system it finances.

While the workshop was not directed specifically to the building of a core curriculum for South Dakota, it was one more important step in the preparation of HMTF members to tackle the work realistically and in concert-like teaching musicians to play the basic scales before exposing them to a symphonic score.

One of the consultants - Miles H. Anderson, Ed.D., Director of the UCLA Allied Health Profession's Project - capsulized the workshop presentations thusly:

> *"Skills are the ability to perform occupational tasks, and knowledge is the possession of and ability to use scientific and technical facts. Attitudes are the sum total of the opinions, beliefs and feelings we hold regarding our work, our fellow workers, our patients, our employers and our environment in general.*
>
> *...a task is the performance of a series of physical, mental and attitudinal acts by means of which one achieves a specific objective. To be teachable, a task must be specific, precisely stated and free from ambiguity that results from omission of important details...task-oriented instruction emphasizes helping people do something useful for themselves and for society with what they learn. It does not mean we are making unthinking robots out of them or that we want to eliminate principles, concepts, theory, basic science and the ability to think. Thinking is a task; solving a problem is a task. Task-oriented instruction helps the student to learn the basic science and technical knowledge related to an allied health occupation, and it helps him to learn how to use it to advantage in his work.*
>
> *...task-oriented instruction enables the student to learn more, in less time and with greater retention (and that is what) occupational education in the allied health field is all about."*

The next step in the progression would be to apply the various techniques of course dissection, task analysis, writing of objectives, etc., to the realities of health manpower training/education programs existing in South Dakota. Though there were still expressions of impatience as a result of the theoretical tone of the first general workshop, a growing willingness on the part of most HMTF members to work toward the core curriculum in an organized, systematic manner was clearly evident when the meeting adjourned.

In preparation for this next step, 22 topical outlines, potentially relevant to a core curriculum for associated health and nursing, were solicited from educators in communications, natural sciences, social sciences and health related areas.

The South Dakota Core Curriculum Project got down to "nuts and bolts" deliberations when a second major workshop of the Health Manpower Council was convened at another relatively isolated Black Hills lodge on May 22-25, 1973. (While two or three members apparently favored meeting in one of the more populated cities in the eastern portion of the state, the general concensus was that freedom from telephones, student conferences and other disruptions was well worth the extra mileage and other logistical problems.)

Eighty participants attended the four-day conclave which was organized into smaller work groups. Consultant expertise supplemented staff and participant input as the program was designed to prepare a preliminary entry level core curriculum for South Dakota's health-related occupations.

Before the HMTF began its concentration on core content, however, the participants first clarified the definitions, rationale and objectives of the curriculum they proposed to develop. Members agreed that, operationally, the core should be modeled as two *integrated* but dissimilar divisions: a *training (vocational/technical)* core derived from skills and knowledge directly related to employment in the health field, and an *educational* core derived from academic disciplines.

After lengthy discussion, it was further agreed that the rationale for the Project would include the following 11 points:

1. To enhance teaching efficiency and economy by structuring a foundation of courses which can be applied to a wide spectrum of careers.
2. To provide uncommitted students with an educational experience which will assist in their choice of a career and will be applicable to that career.
3. To allow the student to synthesize and correlate learning experiences.
4. To permit greater program flexibility and adaptability.
5. To provide greater interaction among a variety of students.
6. To prevent unnecessary duplication of subject matter, supplies, equipment, space, faculty, etc. (economic use of time, money and energy).
7. To simplify administration within and between agencies.
8. To promote an articulated sequence of courses.
9. To provide a basis for non-teacher-biased challenge exams.
10. To provide standardized content.
11. To enhance career mobility.

The 11 points led directly to three objectives which the HMTF framed and adopted. These goals postulated that, through the core curriculum, a student would ultimately possess:

1. A solid foundation of knowledge and skills on which to build occupational mobility in health;
2. A foundation of theoretical knowledge which would permit him to continue an upward academic pursuit rather than having to start over, and
3. The student will have a basic foundation for the future needs of the individual and a basic understanding of what it means to be a healthy person.

Because workshop participants included both clinicians and academicians, the development of the entry level core curriculum was initially divided into training and educational segments to make optimum use of the assembled talent. Also, there was some effort made to balance the known pro-core and anti-core members to prevent domination of the discussions by those with strong opinions one way or the other.

The various groups - each with a consultant or staff member as moderator - were provided with a variety of curriculum resource materials and charged with: (a) formulating potential content for both training and education cores, (b) cross-checking the two to determine commonalities and overlap, and (c) identifying skills and knowledge necessary to fill in the voids which might occur through oversight in such a concentrated effort.

The members worked diligently throughout the session and became so involved in the seriousness of the assignment that they took more time than had been estimated; consequently, they were unable to complete their total mission. Instead, they proceeded as far as they could in the development of the parallel curricula and recommended refinement in future meetings or by smaller committees. On that basis, the workshop was adjudged a productive success.

Of course, there were some shortcomings as indicated by participants' evaluation sheets. A few apparently did not grasp the general philosophy at the outset and were therefore hampered in their contributions. There was some objection to task-orientation, semantic jousting, lack of resource materials and length of sessions. On the plus side, task force members generally were pleased with the openness of the discussions, the encouragement of input from all conferrees and the performances of group leaders.

As might be expected though, not everyone left the meeting totally convinced of the workability or acceptability of a statewide core curriculum. There were many questions left unanswered (or even unasked), and the varying viewpoints of academicians and clinicians were not completely resolved. However, the positive responses to the question of the ultimate value of the Project and its final product greatly outnumbered the negative, and *all* HMTF members evinced a willingness to participate further in the refinement stage.

As the pace of activities increased, more staff direction and administrative attention-to-detail were required, so as a consequence, an associate director (Wayne M. Gildseth, Ph.D.) was added to the program in the summer of 1973. Under his guidance, five subcommittee meetings were scheduled during the latter months of 1973 and the first two months of 1974 to follow up on the accomplishments of the second large workshop. These smaller groups (approximately 15-30 participants per session) were able to proceed more efficiently with the refinement process-improving the content of the primary and secondary cores and revising and editing the measurable (performance) objectives of each curriculum element.

In general, the subcommittees followed the methodology established in the May, 1973, workshop by consultants Jerome Epstein, M.A.; Howard Taub, M.T.; and Lucille A. Wood, R.N., M.S., of Curriculum Development Specialists, Encino, California, together with Thomas E. Freeland, Ph.D., Dean of the School of Health Related Professions, University of Mississippi.

The subcommittees - augmented by staff and consultant input - reviewed the overall concept and recommended that the core curriculum be divided into primary and secondary segments as follows:

Primary: That collection of skills, knowledge and attitudes which is fundamental, foundational and common to *all* South Dakota associated health and nursing curricula, further divided into three subject areas:

1. Health Care Delivery System
2. Introduction to Health Science
3. Emergency Medical Care

Secondary: That collection of skills, knowledge and attitudes which is fundamental, foundational and common to *more than one* type of associated health and nursing curricula in South Dakota, further divided into six subject areas:

1. Anatomy and Physiology
2. Chemistry
3. Interpersonal Relationships
4. Microbiology
5. Nutrition
6. Public Health and Health Care Delivery

Despite personal biases because of vested interests and involvement, subcommittee members approached their task professionally, earnestly and unprejudicially. The primary core was reworked to the best possible state of development, and topical outlines and measurable objectives for the secondary level were prepared.

In addition, a minimum degree of importance was established for inclusion of curricular items (both primary and secondary) in the core content. The subcommittees' objectives included the rating of each item in terms of *commonality* (measure of importance to a specific health education program) and *universality* (measure of importance to health education in general). Also, potential core inclusions were to be evaluated subjectively in regard to the depth of coverage or intensity with which the individual item should be taught. The rating scale ranged from "cursory" through "introductory" and "intermediate" to "in depth".

Out of all the hundreds of man-hours of debate and deliberation, a final product was beginning to emerge. The patience and persistence gave evidence of paying off, but it was not always easy along the way, with an occasional clash of personalities and the foot-dragging of a skeptical few. There was also a dramatic incident during one of the subcommittee meetings which momentarily caused the health manpower director and his staff associates to wonder if there was a conspiracy against their efforts. A large easel pad containing the updated secondary core content for public health and health care delivery was left overnight in the conference room, and someone (a janitor or a core curriculum antagonist?) absconded with it. The concentrated labors of one full day were involved in the theft, but subcommittee members rose to the challenge and with the help of their own personal notes, they were able to reconstruct the stolen data. (The loss of time, however, made it necessary to complete the evaluation process by mail.)

During the final subcommittee meeting, participants recommended that the core material - as amended, corrected and evaluated - be sent to all South Dakota health training/education representatives for still another polishing before the convening of a third full-scale HMTF workshop.

It has been said that the South Dakota Core Curriculum Project charted a narrow course between two old conflicting axioms: "Many hands make light work" and "Too many cooks spoil the broth." Largely through "human engineering," the Health Manpower Task Force members - widely diverse in their training/education philosophies - were kept interested and enthused enough to pursue the core concept at least to, if not over, the brink of implementation.

Following the subcommittee recommendations, all of the core materials were organized and duplicated by the organizational staff and sent to the health manpower training programs throughout the state. In addition, copies went to institutional administrators and to instructors who might ultimately be teaching portions of the core curriculum. A number of changes were suggested as a result of this review process, and so a third major workshop was scheduled in the Black Hills for May 29-31, 1974, to determine the acceptability of the proposed alterations and to discuss possible adoption and implementation of some or all of the developed core.

Seventy participants responded from a broad base of cooperating institutions as the stage-by-stage developmental process continued. While a variety of activities and objectives were planned (including consideration of core instructional materials, challenge examinations, the career ladder aspect and implementation hurdles), task force members again worked overtime on core refinement which, in turn limited other deliberations. As a result, however, out of the workshop came a substantive product which, if it were not adaptable in every instance, was certainly worthy of serious consideration by all of the state's training/education programs because of the caliber and scope of input invested in the birthing.

It was the unanimous concensus, of course, that the core curriculum as developed should not be a static, unelastic regimen, but that it should undergo continuing modifications and upgrading to adapt to evolving needs. The Health Manpower Task Force was recognized as a logical vehicle for ongoing refinement and, additionally, as a practical and beneficial forum for exchange of ideas and the solution of other problems in the preparation of students for health-related careers.

In addition to further refining the core curriculum, the HMTF discussed the controversial subject of semester credit hours as related to the core. The majority opinion of the voting members as it finally emerged was "that although it was the prerogative of each academic credit-granting institution to determine the amount of credit it might wish to grant a student who has demonstrated competency in a given core curricular area (either by taking the course at that institution or via the equivalency or challenge examination route), it is also the prerogative and probably the responsibility of the Core Curriculum Project to *recommend* semester credit hour values which it feels are reasonable and justified for each of the core areas."

The commitment of a well-studied, much-edited core curriculum to paper was in itself a major achievement, but what its ultimate impact on the health manpower situation in South Dakota will be is still a matter of conjecture. Whether it will be widely accepted for practical use - even by its staunchest proponents in the training/education field - remains to be seen.

Despite continuing assurances from staff members that there would be no governmental interference in established programs and that participation would remain strictly voluntary, a feeling has persisted among a few institutional representatives that, sooner or later, some sort of dictum to interfere with academic freedom would be forthcoming. This has been a nagging problem for the Project director at all times. Staff visits to various program sites were rumored to be "spying missions" to see what was being taught and how. One administrator frankly expressed the view that once a core curriculum was developed, institutions would be forced to conform to it or lose federal funds. There were also instances when information about the Core Project was not shared with all faculty members who might have been interested, but this apparently was due more to communications deficiencies rather than any effort to limit participation.

These attitudes and conditions are mentioned, not so much as negative factors, but to indicate the various stumbling blocks which the Project has encountered - and undoubtedly will continue to face.

At the third major workshop, Tom Kilian, Ph.D., then Secretary of the South Dakota Department of Education and Cultural Affairs, emphasized to the Health Manpower Task Force that to achieve the goals of core curriculum, "a strong sense of commitment and purpose" would be required.

Metaphorically, it was one thing to invent the airplane and another to put it to practical use. The same is true of core curriculum. It was realized full well by those involved that implementing the core into existing, historically successful programs - many of them with jam-packed and relatively inflexible schedules - would be (like the airplane's use) a slow, evolving process. In one of his many talks to interested groups, the director capsuled the Project's developmental mission and on-going role:

"Our major goal has been to design a multi-faceted, streamlined core curriculum which will serve as many of the health training/education programs in South Dakota as possible and to provide opportunities for lateral and vertical mobility for students frustrated by repetitious training and time-consuming courses. Side issues include the transfer of credits, credit for work experience, challenge examination possibilities, standardized performance testing, the development of teaching materials and the requirements of continuing education.

The core curriculum has not been imposed by higher authority but is a democratically derived product of representatives of all affected programs in the state, none of which are obligated to accept all or any part of the results. It should be stressed again that the intent of the project is not to make all institutions teach identical content, but at the same time it is firmly believed that the core curriculum and career ladder concept can be implemented in whole or in part with adequate program flexibility and enough room for creative innovation to permit different educational philosophies to coexist.

Even after the long, trying pregnancy, I continue to be as optimistic as ever about the possibilities of core. I realize, of course, that various modifications and compromises will be required to achieve implementation in the various individual programs, but it is hoped that those compromises will not be so great as to destroy the rationale and educational creativity embodied in the concept. While I can sympathize with legitimate deterrents to rapid infusion of the core in certain cases, I find it difficult to accept fear of change, stubborn resistance, self-serving interests and unwillingness to cooperate with other programs as defendable excuses to avoid serious consideration of the core approach as a potential solution to South Dakota's health manpower problems."

Even before the refined version of the core curriculum was completed, several program representatives informed the director that elements of the core would be adopted by their respective institutions in the 1974 fall term. This was particularly gratifying since such quick action had not been contemplated and because there was still a great amount of work remaining to be done in the areas of career ladder expansion, achievement test development and instructional material research and acquisition.

As an expansion of the similitude mentioned previously, the practical use of the airplane was hurried by the demands for speedier transportation and the military needs of World War I. Possibly the implementation of the core curriculum will receive similar impetus from the demands of frustrated students and the vital need to seek solutions to the rising costs of education and health care.

D. OTHER ACTIVITIES

While structuring and refinement of the core curriculum itself received dominant attention, work was begun concurrently on specific career ladder objectives. A consultant was retained to determine the feasibility and format of a mobility pattern involving certified laboratory assistant, medical laboratory technician and medical technologist programs. A similar study was undertaken in the nursing field, encompassing licensed practical nurses, associate degree registered nurses, diploma degree registered nurses and baccalaureate degree registered nurses. Ascertaining whether or not there is a need for a Sotth Dakota-based master's degree program in nursing was also included as a goal of the latter research assignment.

The Project staff has worked with the South Dakota Comprehensive Health Planning Agency (SDCHP) in the preparation of an annual report on "Health Manpower Resources in South Dakota". Additional activities have included cooperation with the South Dakota Regional Medical Program (SDRMP) and other groups in the preparation of materials on health careers to be used for vocational guidance for South Dakota's secondary education students. Cooperatively with SDRMP a statewide system of continuing education for employed associated health and nursing personnel has now been established - the Statewide Community Health Education System (SD-CHES). Numerous visitations and talks have been made to educational institutions, health related organizations and conferences, both in-state and out-of-state.

Work has been initiated on the identification, preparation and collection of instructional materials (case histories, compilations of statistical data, health related examples for traditionally non-health related courses, definitions, etc.) required to adequately teach the core curricula. Preliminary development of a challenge system has also been accomplished.

E. PROBLEMS

Problems associated with the development of the core curriculum concept have been included with the previous description of the Project's history and methodology. Perhaps the greatest difficulty the Project has experienced is inadequate, or on a few occasions, intentionally misleading intra-institutional communications concerning Project activities, developments and philosophies. Efforts are currently underway to reduce the magnitude of this problem. Ultimately, it is hoped that there will be one person in each institution, recognized by the administration and the faculty, as the institutional coordinator for core curricular affairs within that institution. This solution will be only as effective as the coordinator is effective, and already in a couple of instances this mechanism has not been completely successful. Additionally, it has been found that continuous communication between the

Project staff and the HMTF members via visitations, mailings, meetings and workshops is an absolute necessity. Communications remain as the greatest success, necessity and difficulty of the Project.

Some difficulty has been experienced with state fiscal procedures and policies. The budget categories used by the state were not consistent with those of the Contract. Consequently, certain non-contractual expenses were included in the contractual categories of the Contract. As the Contract contained a dollar limit on contractual expenses, it has been necessary during the period of the Contract to request increased limits in the contractual budget category. Also, recent state policies with regard to hiring consultants and paying for large workshops has resulted in the utilization of a non-profit, private incorporation (Augustana Research Institute) as a principal consultant for management of certain workshops and for hiring other consultants. Actually, this practice has proved beneficial to the Project.

F. SUMMARY[1]

All planning for health in South Dakota is directed toward the basic mission of SDRMP-SDCHP: "To improve the quality of care throughout the state and to assure the accessibility of that quality care to all citizens at the most reasonable cost possible."

Accordingly, the Core Curriculum Project is not an end in itself but must be related ultimately to the betterment of health care in South Dakota. Provision of properly trained manpower to deliver that quality health care is a major requisite to the fulfillment of the SDRMP-SDCHP mission. In turn, tying together and coordinating the proliferating and diverse training/education programs to provide the needed manpower efficiently and economically cannot be overlooked in the overall scheme.

In the core curriculum concept, the needs of the student are placed ahead of those of the educator. Three elements are included in the philosophy: (1) the core itself which features a uniformity of course blocks among various programs to permit inter-school transfers without loss of credit; (2) the career mobility arrangement which provides for health career courses in blocks or steps so students can upgrade themselves professionally without starting over or repeating previously studied material; and (3) the challenge system which calls for equivalency or proficiency examinations to permit students to receive credit for competency in the subject matter of a particular course without having to take the course.

In its most idealistic application, the core curriculum would make it possible for an individual to move from a clinical laboratory assistant level to that of a pathologist with a minimum of disruptions or repetition. Mobility possibilities or combinations beneath that utopian example would be numerous and varied, and hopefully the loss of trained personnel in the health field because of dissatisfaction with personal progress could be minimized.

The South Dakota Core Curriculum Project was funded and activated as a pilot program - the first of its kind and scope. Because of the prototype nature of the endeavor, its results have been unpredictable and its longevity uncertain, but four years after an embryonic beginning, the Project has survived its growing pains, has matured without crippling infirmities and promises to leave a few productive offspring who could very well bring new blood to some aging educational practices.

Not all members of the Health Manpower Task Force are convinced of the practicality of core, and though there is virtually unanimous agreement that the concept is worthwhile in theory, a few representatives are equally as convinced that the core curriculum simply will not work in their programs. There is a tendency on the part of some participants to think and react only in terms of their own interests or specialties, and this makes it difficult for them to grasp the broad mobility features of the philosophy. In general, though, discussions in the various workshops were frank, intelligent, positive and professional. Anyone who had something to say - critically or construcIively - was given the opportunity. In addition, the meetings and the Project itself were evaluated in writing by the task force members, and a sampling of their comments follows:

"The opportunity to interact with others in the health education and delivery system in South Dakota has been a great experience. We will soon be implementing a portion of the secondary core on an experimental basis."

"Are the science people (especially chemistry) really listening to the rest of the group?...The majority are male and dominant in their approach."

"...there has been a lot of give and take between the college and professional representatives."

"In the collegiate setting, I hope that (the core curriculum) doesn't necessitate an unlearning or relearning process."

"...the group meetings are of value beyond measure in uniting the various and varied programs under a common set of values and goals."

(Core is) "one of the exciting things which has happened in the health field in South Dakota."

"If the core curriculum concept were accepted and uniform educational standards adhered to, the problems of transfer students would be greatly reduced."

"Personally, I do not feel that a primary core has a place in our college curriculum. It is a hodge-podge of information."

"It would appear beneficial to everyone involved if persons entering health care programs could build upon completed courses and obtain advanced degrees or alter academic pursuits with a minimum of lost credit."

"I do not see a task-oriented core as being at all beneficial for a nurse; in fact, it would be a detriment to the baccalaureate nurse."

"There were too many people (at the workshops) not trying to develop a core but trying to impress each other with their background, status and intelligence."

"... let's get this core implemented...it could be the best thing done for (health) education in the last 20 years."

Regardless of the final outcome, South Dakota's Core Curriculum Project has pointed the way to a new cooperative, innovative and integrated approach to health career training/education. The old traditional "go it along" attitude is being eroded by rising costs, more realistic planning for manpower needs and the insistent demands of students. If, in the end, the concept proves its validity, the ultimate beneficiary will be the health care consumer - and that, after all, is or should be the overriding goal.

IV. ACTIVITIES AND RESULTS

A. INTRODUCTION

The title, South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project, implies the activities of the Project, namely:

1. To develop and implement a core curriculum for use by South Dakota associated health and nursing programs,
2. To increase career mobility options and opportunities for all students in South Dakota associated health and nursing programs, and
3. To devise a challenge system enabling students to obtain credit for formal or informal learning for which academic credit has not been received.

The development of adequate lines of communication has been found to be a pre-requisite and an on-going requisite to meet any of the above objectives. Therefore, the next sections are B. Health Manpower Task Force and C. Communications.

D. Core Curriculum Development and E. Implementation of the Core Curricula explore the development of the core curricula. Career ladder - career mobility - and challenge system activities and results are explored in Sections F. Career Mobility and G. Achievement Test Development, respectively. Other activities of the Project which are difficult to attribute specifically to any one of the three general objectives are included in Sections H. Resource and Instructional Materials and I. Miscellaneous Activities. Finally, a short recap of the Project has been included in Section J. Summary.

B. HEALTH MANPOWER TASK FORCE

One of the first tasks of the Core Curriculum Project was to identify South Dakota associated health and nursing programs for the purpose of establishing the Health Manpower Council. Identification of these programs was difficult. How does one count programs when, for example, a rather tenuous administrative arrangement exists between an academic institution and a hospital to offer a particular program, when an institution advertises an associated health program but has no students or at most one or two students matriculated in the program, when a program is a border-line associated health program as exists in some of the social work and psychology areas, when programs are announced but do not succeed, when programs are made operational with no announcement, or when programs are in the process of phasing out. Also, identification of representatives to a task force is difficult when one is not informed of personnel changes or when an administratively appointed representative does not function. These kinds of problems continue to persist, but over a period of four years the situation has improved, partly because of the impact of the Core Curriculum Project upon South Dakota's health educational system.

Initially, 26 South Dakota institutions were identified as offering 54 different associated health and nursing programs. In 1974, it was estimated that these numbers had increased to 31 different institutions (hospitals, colleges and universities, junior colleges, vocational technical schools, proprietary schools) offering 87 associated health and nursing programs of 32 different types (medical technology, medical laboratory technician, baccalaureate R.N., associate R.N., radiologic technician, etc.).

During this past year, following the development of the core curricular objectives, it has become clear which programs and institutions were able and/or interested in further cooperation with the Core Curriculum Project. It appears that the four proprietary schools (four medical secretary and one medical assistant programs) have minimal interest in involvement in Project activities and in implementing any of the core curricula. Furthermore, two colleges having medical technology programs have so few students in these programs (0-2) that core curricular involvement is not practical. In other instances, formal agreements have been established between those hospitals and academic institutions (e.g., two hospitals and one college in the area of radiologic technology) transferring administrative responsibility to a single institution. Other programs, particularly diploma R.N. programs are being phased out. Subject to these most recent conditions, which remain in a state of flux, lists of cooperating institutions, programs being offered, and Health Manpower Task Force members were revised again in July, 1975 and are included in Appendices B and C.

A further revision of the Health Manpower Task Force into an Advisory Group will be undertaken this fall. The new Advisory Group including an Executive Committee will be designed to meet the needs of both the Core Curriculum Project and the South Dakota Health Manpower (Linkage) Project. The membership and organization of the Advisory Group is as of yet uncertain, but it is possible that a Health Manpower Task Force similar to what now exists may be a subgroup or subcommittee of the Advisory Group.

C. COMMUNICATIONS

As described in Part III. History, Methodology and Problems, the establishment and maintenance of operational lines of communication among the Project, the health programs and institutions has an extremely high priority. Communications are also necessary to foster and enhance inter-program, inter-institutional and intra-institutional communications. Prior to the inception of the Core Curriculum Project such communications were virtually non-existent in South Dakota in associated health and nursing education. Now, they are widespread and in most cases functioning very well. Communicative methods which have been employed include Project staff visitations to programs and institutions, meetings, workshops and the distribution of reports and other mailings.

Formal visitations to programs and institutions have been an integral part of the Project methodology, especially during the first year of the Project. Selected dates and places of visitations and presentation of talks have been listed in Appendix D.

Numerous meetings, workshops and conferences have been attended or conducted by the Project staff during the period of this Contract. In-state meetings, conferences and workshops have been attended and conducted for the purposes of:

1. Presenting the core curriculum concept and activities of the Core Curriculum Project,
2. Creating better communications among associated health and nursing programs,
3. Developing the core curricula and related achievement tests,
4. Establishing enhanced career mobility opportunities among associated health and nursing students,
5. Compiling data on South Dakota associated health and nursing program philosophies and curricula,
6. Constructing task inventories for selected associated health and nursing specialties,
7. Identifying instructional materials which need to be prepared or collected to adequately teach the core curricula, and
8. Providing training sessions for health occupations educators who will be teaching the core curricula.

Out-of-state conferences and meetings have been attended by the Project staff both as participants and as program staff. These conferences and meetings have been invaluable both in generating new ideas and in presenting the Core Curriculum Project story in other states. Several meetings with out-of-state consultants have also been held whenever needed expertise was not available within the state. However, the need for out-of-state consultants has decreased as the Project has matured and as South Dakota educators have developed greater expertise in health curricular development. A list of meetings, workshops and conferences attended by the Project staff has been compiled in Appendix E.

Mailings have also been used to facilitate better communication between the Project and its constituents. Several publications have been prepared and distributed to the HMTF members and other selected persons. [1, 4-14.] Whenever a publication is distributed, a cover letter is included providing information on current and projected Project activities. Similar information is included with mailings of questionnaires and invitations to meetings and workshops. An attempt has been made to identify one contact person within each institution so that information can be distributed quickly by mail or telephone through the contact person to others within his/her institution. So far, this method has proved only moderately successful. Publications mentioned above include:

1. Directory of Health Manpower Training Programs in South Dakota in June, 1972

2. Final Report of the September 14-16, 1972 annual HMTF Workshop

3. South Dakota Health Manpower Information, Health Careers and Selected Health Manpower Information in February, 1973. (This publication was produced in cooperation with the South Dakota Comprehensive Health Planning Agency and subsequent annual issues by them of Health Manpower Inventories have followed a similar format.)

4. Final Report of the May 22-24, 1973 annual HMTF Workshop

5. Final Report of the South Dakota Medical Laboratory Training/Education Study dated September 3, 1974

6. Final Report of the August 30-September 1, 1973 Subcommittee Core Curriculum Development-I Workshop

7. Final Report of the October 11-13, 1973 Subcommittee Core Curriculum Development-II Workshop

8. Final Report of the November 29-December 1, 1973 Subcommittee Core Curriculum Development-III Workshop

9. Final Report of the May 28-31, 1974 annual HMTF Workshop

10. A Case History of the South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project dated October, 1974. (Prior to this publication, a Compendium of the Core Curriculum Project had been prepared to furnish information about the Project upon request from out-of-state persons.)

11. Report on the Implementation of the Core Curriculum dated January 15, 1975

12. Final Report of the May 29-31, 1975 annual HMTF Workshop

D. CORE CURRICULUM DEVELOPMENT

The development of the South Dakota health occupations core curriculum progressed through a number of stages or steps. Initially, the stages were on a plan-as-you-go basis since no model existed for what the Project was trying to do. After about two years, the developmental process became clearer, and it became possible to practice management of the Project by objectives. Specific objectives were written, followed and revised every six months. Communication of these objectives to the HMTF members also proved to be beneficial. Especially during the first two years some developmental errors were made, but fortunately they were not serious, and they did not have a permanent detrimental effect upon the development of the core curriculum.

The period of July, 1971 to September, 1972 was primarily used to present the core curriculum concept to a large number of persons, programs and institutions. In this way, much discussion and many ideas were generated, although no concrete definitions, rationale or objectives for the core curriculum were formulated. Also, during this period, data were collected of program philosophies and curricula. It was initially believed that these data could be used directly to construct the core curriculum.

On September 14-16, 1972, the first annual Health Manpower Council Workshop was held at the Black Forest Inn near Rapid City.[5] Prior to the workshop, Donald Brekke had contacted staff members of the UCLA-Allied Health Professions Project in Los Angeles. This group probably had, at that time, greater experience than any other group in the nation in the systematic development of instructional materials for allied health professions. They had compiled task inventories of selected health occupations specialties and, partly on the basis of these inventories, constructed performance objectives and instructional materials. The success of their work is manifested in that these instructional materials currently have widespread use throughout the nation in health occupations education. The approximately 90 participants at the September Workshop under the guidance of Donald Brekke and four UCLA-AHPP staff members:

1. Reviewed the principles of the task-oriented approach to health occupations curriculum construction,
2. Reviewed and revised UCLA-AHPP task inventories to meet the needs of selected South Dakota health occupations specialties, and
3. Reviewed the principles of task-oriented instruction.

Again, no concrete definitions, rationale, or objectives were formulated for a core curriculum. However, the lines of communication among HMTF members received a needed boost and the value of task orientation and skills needed to ultimately construct performance objectives were planted as seeds for a later harvest.

From September, 1972 to May, 1973, collection of South Dakota health occupations program philosophies and curricula were compiled into two unpublished volumes, one for associated health programs and one for nursing programs.[15] During the winter of 1972-73, a number of South Dakota educators and health professionals prepared topical outlines for 22 specific course areas in communications, natural sciences, social sciences and health related areas which would be typical and inclusive of the content normally included in these courses. These topical outlines have been included in Appendix F. In early spring, 1973, questionnaires were sent to all South Dakota associated health and nursing programs asking which of the content items in the 22 topical outlines were taught in the courses taken by their students. It was at this time that it was recognized that the compilation of philosophies and curricula, although it had other values, would not lead to an implementable core curriculum. Furthermore, the questionnaire solicitation was a mistake. The data received from these questionnaires were never used, valuable time of HMTF members was expended needlessly, and time later had to be expended explaining this situation to HMTF members. It was also at this time that general core curriculum developmental objectives were first formulated outlining a methodology which ultimately resulted in a viable core curriculum. These original general objectives are reproduced in Appendix G.

The stage was now set for the May 22-25, 1973 annual HMC Workshop which was held at the South Dakota State Game Lodge near Custer[7]. Once again, four members or former members of the UCLA-AHPP were recruited to help Donald Brekke and Wayne Gildseth conduct the workshop. Approximately 80 participants at this workshop formulated for the first time definitions of what they meant by a core curriculum, eleven rationale for a core curriculum, and three objectives providing guidelines for the inclusion of material into a core curriculum. These definitions, rationale and objectives may be found in Appendix H (the rationale and objectives are also included in Section III.C. of this Report). The question now was how the workshop participants were to begin translating the definitions, rationale and objectives into content for a core curriculum. First, the workshop participants were divided into two major groups. Health professionals and educators were placed into a "vocational" group and non-health educators (mostly scientists) were placed in an "academic" group. The vocational group was further subdivided into four subgroups, and each of these four subgroups was assigned the objective of identifying those health related tasks together with the requisite skills which should be included in an entry level core. The academic group was subdivided into anatomy and physiology, chemistry and microbiology subgroups for the purpose of refining the previously prepared topical outlines in these areas for inclusion into an entry level core. Previously prepared task inventories, course topical outlines, and UCLA-AHPP materials were made available to the two major groups in fulfilling their assigned objectives. Following completion of their respective tasks, those participants in the academic group were distributed among the four vocational subgroups and the new set of four subgroups were asked to cross check the two types of potential core content. It was believed that this procedure would maximize the particular abilities of the participants and would help reconcile differences in the vocational and academic approaches to education.

The final result of the procedure was that a considerable amount of content was identified for potential inclusion into a core curriculum, although time did not permit these content to be compiled in a well-organized manner. The results have been included in the Final Report of the May, 1973 Workshop.[7] One particular difference of opinion among the workshop participants centered around the issue of whether the core curriculum should be task or concept oriented. The developmental process used at this workshop was predominantly task oriented, but ultimately the final core curricula probably became more concept oriented than task oriented. One recommendation emanating from the workshop was that the potential core content which had been identified should be further refined via a series of smaller subcommittee workshops, a suggestion which was followed.

The first HMTF subcommittee workshop was held in Sioux Falls on August 30-September 1, 1973.[9] Of the fourteen participants at this workshop, eleven different health occupations specialties were represented. Two of the participants were biologists and one was a chemist. Eight of the participants were from four-year colleges or universities, one was from a junior college, three were from hospitals, one from a vocational-technical school and one from a proprietary school. The eleven health occupations represented included nurses aide, licensed practical nursing, associate degree R.N., diploma R.N., baccalaureate R.N., medical laboratory technician, medical technology, pharmacy, radiologic technology, respiratory therapy, and medical secretary programs. This type of representation was attempted in all five of the subcommittee core development workshops, although because of the content of the later workshops, additional representatives were added as necessary in the areas of chemistry, biology, sociology, psychology, public health and nutrition. Consequently, a larger number of participants attended the later workshops. The participants at the August 30-September 1, 1973 workshop further defined the core curriculum as comprising two different types of curricula, a primary core curriculum and a secondary core curriculum as defined below:

> *Primary Core Curriculum: That collection of skills, knowledge and attitudes which is fundamental, foundational and common to all South Dakota associated health and nursing curricula.*
>
> *Secondary Core Curriculum: That collection of skills, knowledge and attitudes which is fundamental, foundational and common to more than one South Dakota associated health and nursing curricula.*

The participants at the first subcommittee workshop also drafted topical outlines for the primary core curricula comprising three areas: Health Care Delivery System, Introduction to Health Science and Emergency Medical Care. Furthermore, each topical outline item was rated with respect to its degree of importance to general health occupations education and to the extent of coverage to which it should be covered. This work was done in steps. Each step was initiated in small groups of three to four persons, and then the small group results were discussed and modified in large group session. Surprisingly, the small group results were usually quite similar. The exact details of the methodology and rating systems used can be found in the Final Report of this workshop.[9]

Two additional HMTF subcommittee core curriculum developmental workshops were held on October 11-13[10] and November 29-December 1, 1973[11]. The number of participants at these workshops were 21 and 23 persons, respectively. At these two workshops the secondary core curriculum was subdivided into six areas: anatomy and physiology, chemistry, interpersonal relationships, microbiology, nutrition, and public health and health care delivery. Topical outlines, degree of importance ratings, and extent of coverage ratings were developed for each of these areas using a methodology similar to that used at the previous subcommittee workshop. Topical outlines were developed for anatomy and physiology, chemistry and microbiology at the October 11-13 workshop and for interpersonal relationships, nutrition, and public health and health care delivery at the November 29-December 1 workshop.

The last two core developmental subcommittee workshops were held on January 31-February 2 and February 21-23, 1974 in Sioux Falls with approximately 30 persons attending each workshop. Howard Taub and Jerry Epstein, former employees of the UCLA-AHPP, had been contacted in September, 1973, and asked to translate the draft copy of the primary core topical outlines into performance (measurable) objectives. They were also invited to the January 31-February 2 workshop, and during the first day of the workshop presented a training session on how to translate topical outlines (with their degree of importance and extent of coverage ratings) into performance objectives. The remaining portion of the first workshop and the entire second workshop were used to review and revise the performance objectives for the primary core curriculum prepared by Taub and Epstein, and to write performance objectives for the six secondary core curricular areas. As usual, this work was accomplished primarily by small groups of three to five persons.

The draft performance objectives completed at the last two subcommittee workshops were sent to health occupations educators and other educators during the month of March. The reviewers were asked to recommend any changes (deletions, additions or rewordings) of the objectives which they believed desirable. In addition, each South Dakota associated health program was asked to rate each primary and secondary core curricular objective with respect to its degree of importance to that program. These ratings were on a scale of 0-3 (0 = not important, 1 = slightly important, 2 = important and 3 = very important). In April and May, the review results were compiled by the Project staff with the assistance of computer specialists.

The next stage in the core curricular developmental process was accomplished at the May 28-31, 1974 annual HMTF Workshop held at the Black Forest Inn near Rapid City.[12] Howard Taub and Jerry Epstein were once again recruited to help conduct this workshop of about 80 participants. The principal result of this workshop was the revision of the topical outlines and performance objectives for the primary and secondary core curricula based upon the recommended changes from the review process. In addition to this work, the participants managed to find time to tentatively suggest the number of semester credit hours which the primary core and each of the secondary core areas might be worth, to recommend guidelines for the development of achievement tests for the primary and secondary core curricula, and to consider the principles of selecting appropriate learning activities for the core curricula.

The Project activities during the period of July, 1974 through June, 1975 were primarily directed to implementing the core curricula, preliminary development of core curricular achievement tests, and examining career mobility options in nursing. However, as a result of some of these activities a few recommendations were made for further revision of specific primary and secondary core curricular topical outline items and performance objectives. Approximately 70 participants at the May 29-31, 1975 annual HMTF workshop held at the South Dakota State Game Lodge near Custer acted upon these recommendations.[14]

Current topical outlines and performance objectives are presented in Appendix I. It is anticipated that minor modification of topical outlines and performance objectives will continue via normal expected curriculum revision procedures, and especially as a result of achievement test development. However, the basic content of the core curricula are expected to remain fairly constant for several years.

The compiled degree of importance ratings of individual performance objectives according to type of health occupations program have been reproduced in Appendix J. The last column for each core curricular area contains mean program values of the degree of importance ratings. These values are computed from the values listed for the various types of programs subject to the condition that the program indicated most or all of the performance objectives for a given core curriculum area to be at least slightly important. Due to revisions of the performance objectives since solicitation of these data, it will be noted that there are some gaps in the data. It should be emphasized that the ratings are considered to be quite qualitative in nature. They are included because they have provided one means of predicting and analyzing implementation practices, and they may play a minor role in the development of the core curricular achievement tests.

E. IMPLEMENTATION OF THE CORE CURRICULA

Many of the benefits accrued from the Core Curriculum Project are difficult to effectively measure, e.g., better communication among health occupations educators, improved quality of health occupations education, more rational health manpower planning, greater coordination between the academic and clinical curricula, improved administration of health occupations education, etc. Implementation of the core curricula, on the other hand, can be observed and to a certain extent quantitatively measured. Implementation can be used as one measurement of the Project's impact on health occupations education in South Dakota. The degree of implementation of the core curricula is not yet clear as only one academic year has elapsed since the core curricula have been available in a reasonably refined, complete form. A minimum of one academic year is required to process new academic offerings in a number of educational institutions. Yet, some observations have been made concerning implementation.

It is known that several instructors began utilizing portions of the core curricula even during the developmental period of 1973-74. Most of these early implementation efforts occurred in the primary core curriculum, anatomy and physiology, chemistry, microbiology and nutrition areas. In fact, some educators began implementing portions of the core curricula as soon as draft copies of the topical outlines became available and before the preliminary performance objectives were even constructed.

An implementation study was conducted in the fall of 1974 to determine implementation plans anf efforts of the programs and institutions.[13] To this end, questionnaires were distributed to 65 South Dakota associated health and nursing programs as well as to one key administrator at each of the 28 institutions in which the programs were located. Of these programs and institutions, 26 programs in 10 different institutions either did not respond or responded too late to be included in the study results. Of the nonresponders, one program was in a hospital which was phasing out its program, two programs were in hospitals which had established a formal affiliation agreement with an academic institution, two programs were in colleges which had very few students in their programs, and two programs were in two colleges which either had discontinued their programs or were undergoing administrative changes in the programs. Thus, approximately 70% of the programs and 80% of the institutions who might have been expected to respond, did respond. These percentages do not include late responders. The responses were analyzed and from the results, the Project staff prepared tentative recommendations concerning which core curricular areas each program might wish to consider implementing. These tentative recommendations may be found in Appendices K, L and M. The Project staff also prepared the following comments and conclusions regarding motivations for and practices in implementing the core curricula:

1. The extent to which many of the programs stated that they were already covering a number of the measurable objectives, would recommend that the objectives be incorporated into their curricula, or had already instituted new offerings to incorporate the objectives was highly encouraging. In fact, it appears likely that eventually the primary and secondary core curricula may be utilized somewhat in the manner envisioned by the Core Curriculum Project staff. That is not to say that there will not be implementation difficulties and disappointments, but on the whole, the staff remains optimistic.

2. It is apparent that the core curricular measurable objectives meet many of the basic educational requirements of associated health programs, depending on the type of program. Hence, one would expect to see the core curricular content incorporated into the programs in some fashion.

3. It is still hoped that *at least* Part I of the primary core curriculum, if not the entire primary core curriculum, could be presented early in the program to those students who have not mastered this material prior to matriculation into the program. It is believed that this would provide major support to the concepts of lateral mobility and career choice which has been so widely discussed. Beyond this, it would provide these students with a fundamental awareness of the entire health care delivery system within which they will eventually practice, as well as an early understanding of their role and the roles of others in the system.

4. The advantage, to individuals seeking upward mobility in their specialty or to students transferring to another institution and/or program, of offering the relevant portions of the core curriculum in distinct, identifiable courses or modules is obvious.

5. Where there are two or more programs within a single institution who require common portions of the core curriculum, it would seem that it would be beneficial pedagogically and economically to teach those objectives in courses or modules common to all programs requiring them.

6. Where content has been identified as similar to what is required of students in other programs and institutions, it becomes possible for a program to evaluate portions of its program in terms of student performance in comparison with other programs and institutions. This will become feasible when statewide core curricular achievement tests are available together with normative data for them. Such evaluative techniques would become especially valuable and feasible if the relevant core objectives were included in separate, identifiable courses or modules rather than being broadly integrated throughout a spectrum of courses.

7. Measurable objectives can be useful in curricular planning (selection of courses, establishing prerequisites, planning the curricular content of advanced courses, etc.) as well as aiding in the development and evaluation of instructional methodologies and materials.

8. The use of core curriculum objectives should enhance communication between associated health program staff members and other instructors who may be teaching courses required by the associated health students such as anatomy and physiology, microbiology, chemistry, sociology, psychology, etc.

9. The primary and secondary core curricula are divided into fairly small, basic units of material. Where more than one associated health program exists within a single institution it is quite likely that students from two or more programs may share common needs in certain areas, but their needs begin to deviate beyond the basic areas. It would seem that the core curricula might provide a logical, economical, and pedagogically sound path for accommodating these needs without the necessity of teaching separate courses or sections for each program. For example, it is possible that the anatomy present in Part II

and possibly Part III of the primary core may be sufficient for the students of some programs. However, students from other programs may need to also complete the material found in anatomy and physiology found in the secondary core. If further specific needs exist for additional anatomy or physiology beyond the secondary core, this material could be included as a part of the professional requirements for those programs. In this process, students would proceed naturally and logically through as many common, well-identified curricular steps as necessary to meet their educational needs, and the number of separate curricular preparations would be minimized.

10. It is believed that the core curriculum is sufficiently basic in content so that should an associated health student transfer to a non-health related field during his/her training, the core courses already taken might satisfy some of the institutional core or new major requirements. This is not as likely to be true if the core curricular content is integrated throughout professional courses for a specific associated health program.

11. One potential barrier to full realization of the advantages of a core curricular approach may be found in the fairly common practice of integrating relevant measurable objectives throughout all or a substantial portion of a program's professional curriculum, instead of offering them within a smaller number of specific purpose, identifiable modules or courses. Some effects of this practice can be seen by referring to the previously listed motives for implementing appropriate portions of core. In particular, one might examine the potential effect upon students transferring into a program with previous education and/or experience in core curricular areas. Suppose that a student appears to have satisfactorily completed the measurable objectives of the primary core curriculum and interpersonal relationships as determined via achievement tests and/or transcripts. Under such conditions, it may be possible to grant the student academic credit for these core curricular areas, but unless the measurable objectives for these areas are localized into discrete courses or modules, it is likely that the student will be required to repeat this instruction in moving through the professional courses in which they are dispersed. Thus, the student has been penalized by loss of time even though credit has been given. However, the penalty may extend even beyond this point. It is possible that primary core and interpersonal relationships will not satisfy any of the institutional general education requirements and would have to be regarded as a replacement for electives. In cases where there are few electives available in a program, which is common in associated health education, it is quite possible that the transferring student will bring in more courses which could be transferred for electives than can be accommodated and would therefore end up with more semester credit hours than are required for the degree with little or no savings of time. In other words, *avoidance of unnecessary repetition is fully as important to a transfer student as the issuance of academic credits.*

12. In a number of the questionnaires, it was reported that certain of the core courses which would be recommended or required of students were not available at that institution either because of insufficient qualified staff or for some other reason. Yet, in some of the institutions in which these programs were located, there were one or more other programs who stated that they were covering the objectives, although they were integrated throughout the professional courses. This appears to be particularly true in those institutions offering a nursing program which is not surprising since nursing programs seem to require more of the measurable objectives than other programs of comparable length (one year, two years, etc.). From the viewpoint of a non-health educator this is difficult to accept. Nursing programs, like many allied health programs and a few vocationally oriented programs, such as elementary education, have traditionally been concerned only with their own students in curricular planning. Yet, at the same time, these programs would be seriously impaired if non-professional courses such as English, social sciences courses, science courses, etc. were closed to their students. In other words, health occupations educators have for many years had the luxury of planning curricula with only their own students in mind, and in a sense have been allowed to become very provincial and self-centered in curricular matters. Unless there is strong justification for maintaining the status quo, the Core Curriculum Project staff believes that it is not unreasonable for nursing or similar programs to re-examine their professional courses for the purpose of relocating those measurable objectives into separate courses or modules which can be shared by several programs, but which are not currently available. Sharing and providing educational support for students other than those of one's own program can be most rewarding and beneficial to everyone concerned.

13. It was noted in a few instances that when non-health professional core areas were involved such as anatomy and physiology, chemistry, microbiology, etc., it was suggested that if the Core Curriculum Project desired to know what was taught in these courses, the appropriate departments should be contacted. In response, the Core Curriculum Project staff would like to suggest that when such courses are required by a particular health program, the program must have a reason for the requirement, and furthermore, that these reasons should be founded in course content. It is believed, therefore, that associated health educators have a responsibility to know what content their students need in non-professional required courses, to communicate these needs to the appropriate instructors and departments, and finally to know whether these needs are being met. This does not mean dictatorial authority, but it does infer responsibility for input into the content of non-professional required courses. Perhaps one would find that too many or too few non-professional courses are required, or that the courses required are not the appropriate requirements. Educators must assume not only the responsibility of insuring that their students receive the content essential to them, but also to protect their students from unnecessary educational requirements. Perhaps this is one way to accommodate the core curricular objectives which programs say they would like their students to have, but don't have time to offer, or even to grant the student additional course electives, which might not be such a bad idea.

14. Perhaps intra-institutional communication remains as one of the principal barriers towards implementation of the primary and secondary core curricula. Time and again the Core Curriculum Project staff is informed that the results of the Core Curriculum Project are not being communicated even to all the staff within a single program. All too often there appears to be limited communication regarding curricular needs between programs and departments within specific institutions. In the absence of adequate communication, it appears doubtful that implementation of the core curricula will be achieved even if implementation would be beneficial to the institution and the associated health students within that institution. One possible solution might be to hold a two-day institutional core curricular workshop. Although the Core Curriculum Project staff is reluctant to become involved in the academic affairs within a single institution, if such a workshop would be feasible and beneficial, that staff would be willing to participate if invited to do so.

It now appears that 10 of the 23 institutions listed in Appendix B will be offering the primary core curricula to some 18 different programs this coming year. Ultimately, it is hoped that the primary core curricula would be available in 17 of the 23 institutions involving some 47 different programs. This ultimate expectation is less than the total number of institutions and programs because a number of programs, e.g., medical technology, contain training programs which are strictly clinical in nature which have no responsibility for teaching either the primary or secondary core curricula, and because a few of the institutions have only one program with relatively few students so that the introduction of new courses might not be economically feasible. The possibility also remains that in time the primary core curricula may be partially or totally moved into the secondary education curricula, i.e. the junior and senior high schools, but this would at best be a gradual development over a period of several years.

Implementation figures for the secondary core curricula are more difficult to estimate. A vast majority of the colleges and universities are already teaching most of the secondary core curricular performance objectives. The vocational-technical schools and some of the hospitals are teaching portions of the secondary core curricula. The basic secondary core implementation issues involve course prerequisites, whether the performance objectives for a single secondary core area are taught within a single identifiable course, whether the associated health and nursing students are required to take such courses, etc. When the achievement tests are developed and in use, some of these questions may be answered. At present, numerical estimates would be so qualitative that they would serve no useful purpose.

A portion of the May, 1975 annual HMTF Workshop was devoted to a panel presentation and plenary discussion session of core curricular implementation issues. Although a report of the panel presentation and discussion has been included in the Final Report of the May, 1975 Workshop[14], it is sufficiently indicative of the issues as perceived by the HMTF members that it has also been included in Appendix N of this report.

The Core Curriculum Project staff remains guardedly optimistic regarding ultimate implementation of the core curricula. Dr. Thomas Kilian, former Secretary of the South Dakota Department of Education and Cultural Affairs, analyzed the problem well at the May, 1974 Health Manpower Task Force Meeting when he said: *"The Core Curriculum Project is represented by an extremely diverse group of institutions with their own individualities, purposes, interests and needs. We need to have cooperation among these institutions, but at the same time they need to have the freedom to remain as distinct institutions as opposed to a monolith. If the goals of the Core Curriculum Project are achievable, it is going to require compromise and/or sacrifice on the parts of the institutions. Fulfillment of these goals is going to require a strong sense of commitment and purpose. The Core Curriculum Project goals will take a considerable amount of time, probably years, to really obtain total agreement among its various components."*[9]

F. CAREER MOBILITY

Providing both lateral and vertical mobility for associated health and nursing students in South Dakota appears to be primarily dependent on the educational and training curricular (both academic and clinical) requirements which the students must meet. In order for a student to move either laterally or vertically in his/her educational program of study, provision must be made for the granting of credit and advanced placement for previous formal (institutionalized education) or informal (self-study or experience) learning. The credit granted should actually apply to the program's curricular requirements. Otherwise, the student will still be required to spend considerably more time meeting the program requirements than would a generic student in that program. Two major obstacles appear to prohibit optimal mobility opportunities. One obstacle is the lack of an acceptable, viable challenge system, and the second obstacle is the lack of sufficiently flexible or adequately designed program curricula to permit the utilization of a challenge system even if it did exist. The development and implementation of the primary and secondary core curricula will help meet the curricular and mobility options which are needed. However, a satisfactory solution to the mobility problem will not be attained until adjustments are made in the professional curricula (both academic and clinical) which are unique to each type of associated health and nursing program (and often among different institutions offering the same type of program). In order to evaluate the changes in professional curricula needed to provide greater career mobility, the Project has undertaken three major activities during the past four years.

The first major activity began during the first two years of the Contract period and has already been described. The purpose of this activity was to collect and tabulate educational philosophies, curricular requirements, and in some cases expected student performance levels for all South Dakota associated health and nursing programs. These data which are not out-of-date (the nursing programs updated their data this past year) were compiled in two unpublished volumes, one for associated health and one for nursing.[15] Coincident with these efforts, task inventory analyses were compiled for selected health occupations programs. The most complete task inventory analysis was prepared for the various educational levels of South Dakota medical laboratory practices. Initially, these efforts were directed towards the development of a core curriculum, but the results have been more useful in career mobility studies.

During the 1973-74 academic year, a career mobility study was conducted of the South Dakota medical laboratory programs. Sr. Mary Schneider, a medical technologist, and for several years the medical technology education coordinator at McKennan Hospital in Sioux Falls, served as a part-time staff member of the Project in coordinating this study. The study involved three levels of medical laboratory education: four-year medical technology (MT) programs, two year medical laboratory technician (MLT) programs and one-year clinical laboratory assistant (CLA) programs. Ten colleges and universities plus six hospitals offer academic and clinical training, respectively. There are two college based MLT programs and two vocational-technical school based CLA programs in South Dakota. Via a process of visitation to each of these institutions, mail and telephone communications, use of previously collected data, attendance at out-of-state meetings and conferences on medical laboratory education, communications with out-of-state institutions who have developed innovative medical laboratory programs and a medical laboratory meeting in Sioux Falls, Sr. Mary Schneider met the following objectives:

1. To provide recommendations regarding the delineation of the responsibilities of certified laboratory technicians, medical laboratory technicians, and medical technologists. These recommendations are based upon a task inventory previously prepared by South Dakota medical laboratory training/education coordinators and instructors and should include reasonable decision making expectations.

2. To determine to what extent one might expect the certified laboratory assistant (CLA), medical laboratory technician (MLT) and medical technologist (MT) programs to participate in a career ladder. Differences in educational philosophies and goals among the South Dakota CLA, MLT and MT programs should be explored, reported and incorporated into curricular and career ladder recommendations.

3. To develop a general curriculum integrating academic and clinical training suitable for use by South Dakota medical technologist (MT) programs.

A Final Report of the medical laboratory study on career mobility was published on September 3, 1974.[5] The report included:

1. Identification of the training areas and number of semester credit hours which students from each medical laboratory program would be justified in receiving upon progressing from one level to a higher level,
2. Recommendations of curricular changes in medical laboratory programs which would enhance educational quality and/or effectiveness and which would increase career mobility opportunities for the students,
3. Consideration of the need for improving dialogue and in establishing better affiliation agreements and educational ventures between academic and clinical programs,
4. The data available of curricular content of the South Dakota medical laboratory programs was updated,
5. A model curriculum for an integrated academic clinical MT program was developed, and
6. Career entry responsibilities and capabilities of CLA, MLT and MT students were explored.

As a result of the study, curricular changes have been made in some of the programs, although not to as great an extent as one might have wished. The coordination of, especially the MT academic programs, and dialogue between the academic and clinical MT training institutions have improved, but more remains to be done. An academic institution and a hospital actually designed an integrated MT program, but the venture failed, partly because the academic institution did not provide funding support to the hospital and because of staffing problems within the hospital. Two or three other institutions have or are considering such ventures, and one MT academic program has considered the utilization of small, rural hospitals for a portion of the clinical training. The impact of this study has been much greater among the MT and MLT programs than with the two CLA programs. It is hoped that during the next two years, career mobility options for medical laboratory students in South Dakota can be further explored and implemented.

A preliminary statewide investigation of career mobility opportunities in nursing has been underway since September, 1974. Kathryn Vigen was selected as a staff member of the Core Curriculum Project for the purpose of coordinating the nursing career mobility study. Kathryn Vigen has her baccalaureate R.N. degree and should complete a masters degree in education in the fall of 1975. Prior to this study, she taught at an LPN program at the SouthEast Area Vocational Technical School in Sioux Falls and before that at a baccalureate R.N. program at Hamlin University in St. Paul, Minnesota. Nursing is not included among the associated health programs, and hence a nursing career mobility study under this Contract deserves special justification. There are more nursing students in South Dakota than the total number of students in all of the associated health programs. Next to physicians, nurses are key personnel in our health care delivery system in their impact upon associated health services. Associated health and nursing education share many commonalities, and the core curricula necessarily had to be designed for both. Because of the program sizes and the number of faculty employed in South Dakota nursing programs, successful implementation of the core curricula could never be attained without their support. However, with regard to career mobility both the core curricula and the professional curricula are important. Since nursing education was a key to the success of the Project, and since career mobility in nursing education is such a perplexing and complex problem, it was felt that much could be learned about career mobility development by initiating a statewide career mobility study on nursing in South Dakota. (No future Core Curriculum Project funds will be expended for this purpose.) The nursing programs in South Dakota, as a result of the success of this preliminary study, have submitted a five-year grant proposal to the Division of Nursing of the Bureau of Health Manpower, DHEW. A decision to approve or disapprove this grant should be forthcoming in the spring of 1976. During the interim period, the SDRMP has allocated funds to continue the study. The preliminary study on nursing education in South Dakota has involved three baccalaureate R.N. programs, three diploma nursing programs, three associate degree R.N. programs and five licensed practical nursing programs located in five colleges and universities, two community colleges, three hospitals and four vocational-technical schools. A summary of what has been accomplished this past year follows:

1. The nursing subcommittee of the Core Curriculum Project has been meeting regularly throughout the past year.

2. The NOM (Nursing Opportunities for Mobility) task force consisting of representatives from all levels of nursing education has been elected by the nursing subcommittee and has been functioning for almost a year.
3. This group has established their purpose and objectives, namely:

Purpose and Objectives
as stated by the
Nursing Subcommittee Task Force on
Nursing Opportunities for Mobility (NOM)
Adopted September 25, 1974

PURPOSE: To develop a plan (model) to make career mobility in nursing available to students.

CAREER MOBILITY DEFINED: A system designed to facilitate movement within nursing education with a minimal loss of time and effort by recognizing previous education or experience.

OBJECTIVES:

1. To gather data to document what is previously being done in the nursing programs in South Dakota in providing mobility for students with previous education or experience in nursing.

2. To identify expected terminal behaviors of the graduates of the various levels of nursing education programs.

3. To determine commonalities and explore differences between and among the various levels.

4. To make differentiation statements regarding the expected terminal behaviors of the various levels.

5. To make recommendations for a nursing core content.

6. To propose a possible sequencing of nursing core content and planned learning experiences.

7. To provide on-going communication with nursing education programs in South Dakota regarding the activities of the task force on nursing opportunities for mobility (NOM).

8. To invite input from nursing service, nursing education, and recent graduates of the various levels of nursing.

9. To develop a refined model for possible implementation in South Dakota.

Four of the nine objectives have been completed and two others will be on-going objectives throughout the project. The other three have been incorporated into the grant proposal which has been submitted to the Division of Nursing. The following results have been attained:

a. A survey was made establishing present efforts of the South Dakota nursing programs in providing mobility opportunities for students with previous education or experience in nursing. This survey showed that 2.89% of the total enrollment in all of the nursing programs in South Dakota last fall received advanced standing for previous education in nursing.
b. The terminal behaviors for graduates from all levels of nursing education in South Dakota have been identified and approved by all 15 nursing programs.
c. A Commonality Statement and Differentiation Statements for the expectation levels of various nursing graduates have also been written and adopted by all the programs.

4. Three workshops have been held for the nursing subcommittee and other invited participants:

   a. The first was for the purpose of organization and to establish direction.
   b. The second workshop was held with nursing service, hospital and nursing home administration, consumers, students and graduates. The degree to which the present system in nursing education is meeting present and projected needs was discussed.
   c. The third workshop was attended by ninety-two nursing educators who explored the barriers and benefits in developing a statewide career mobility plan for nurses and nursing students. Unanimous agreement was reached by all 15 nursing programs to voluntarily endorse and cooperatively develop a statewide career mobility plan for nursing.

5. The plans for the grant proposal to the Division of Nursing, Bureau of Health Manpower, HEW, were reviewed by the nursing subcommittee or representatives from the 15 nursing programs and were unanimously endorsed.

In the meantime, while waiting for approval of the grant proposal, the South Dakota Regional Medical Program has agreed to provide interim funding so that the progress which has been realized by the nursing programs in South Dakota during the past year can be continued.

In the future, the project will be known as Project MOTION (Mobility Options to Increase Opportunities in Nursing).

It is expected that many of the experiences and methods used to improve career mobilities in nursing can be adopted by the associated health programs. The Project staff is pleased with its efforts in this area as expressed by the director in his annual report at the May, 1975 HMTF Workshop when he said:

"The work of the South Dakota nursing education programs this past year towards career mobility options is most encouraging. Reportedly, there are those who have unjustly accused me of being too critical of the nursing profession, though there have been times when it was necessary to set up stakes to measure progress in the enhancement of career mobility opportunities in nursing. However, thanks to the work of Kathy Vigen, a progressive, hard-working task force, and the nursing subcommittee this past year, nursing education in South Dakota is on the move towards a statewide system of career mobility options in nursing education. I am duly impressed.[14]

One final thought might be interjected concerning the potential role of the primary core curriculum upon career mobility, especially lateral mobility. The Project staff believes that the primary core curriculum should be required of all South Dakota associated health and nursing students as well as available to all potential health occupations students. Furthermore, the staff recommends that the primary core be taken early in the students' program. Many students really do not know whether they want to enter the health occupations field or might be uncertain in their choice of specialty. Exposure to the primary core content would provide the students with information concerning a variety of health careers, a basic knowledge of our health care delivery system, an introduction to some of the course areas required of health occupations students, and an exposure to emergency medical care. This background would better prepare the student to decide whether to continue in health occupations and would assist the student in selecting his/her specialty. Those students transferring out of health occupations into other areas of training would still have completed a course which would be beneficial to them. If a student decided to postpone or terminate his/her post-secondary education, the primary core curriculum would provide sufficient training - better than is often the case - for immediate employment in the health care industry, e.g., as an emergency medical technician, custodian in a health care facility, health related clerical positions, food service employees, aides, etc. A couple of barriers currently predicate against use of the primary core curriculum for these purposes. In some programs, the primary core is not taught early in the students' career and/or the primary core performance objectives are dispersed throughout a number of professional courses. Also, in some programs, e.g. nursing, there is severe competition for entry into the programs. Consequently, students are literally forced to make early career commitments which they may be reluctant to revise. Many of the Health Manpower Task Force members believe that ultimately the primary core curriculum should be incorporated into the secondary education level. The advisability and feasibility of this possibility will be explored during the next two years, but in any event, such a transition would require several years to be fully implemented so that for the time being efforts need to be continued to implement primary core in the post-secondary institutions as favorably as possible.

G. CHALLENGE SYSTEM

Transfers of academic credit as well as granting of academic credit and advanced placement are key issues in career mobility opportunities for students. Transfers of credit among accredited academic institutions is a regular practice. However, whether courses taken at one institution are allowed as substitutes for specific required courses at another institution is often another matter. What real advantage exists for the student who receives credit transfer, but still has to spend additional time repeating certain courses because a program or department was unwilling to accept previously taken courses as suitable substitutes. This situation is improving, but still is a problem in South Dakota associated health and nursing education. The career mobility activities have been directed towards solving these problems.

Still another difficulty exists for the student who has achieved certain levels of performance via coursework at vocational-technical or proprietary schools for which no academic credit has been received, by self-study, or through work experience. Many, but not all, programs and departments in South Dakota are willing to grant academic credit and perhaps advanced placement to such students, often on the basis of scores achieved on challenge examinations. Problems still exist, however, for such a student. A specific program or department may not be willing to grant either credit or advanced placement. Some programs and departments may be willing to grant academic credit, but no advanced placement which means the student still has to take the courses over if they are prerequisite courses to program or departmental requirements, as is often the case. Still in other cases, the student may be given advanced placement, but no credit, meaning the student doesn't have to repeat the courses, but must take additional coursework to accumulate sufficient credits for graduation. Often, challenge exams used for advanced credit and/or placement are poorly written, require unreasonably high scores, are biased towards specific details in the course taught at that institution, etc. The Project has used a multiple approach to solve these problems.

First, primary and secondary core curricula as developed contain those performance objectives felt to be the minimum acceptable performance levels for students in certain introductory course areas. It is recognized that these areas as they are actually taught may go beyond these objectives, but if a student has mastered the core curricular objectives it is proposed that both academic credit and advanced placement be granted. The question remains as to how to determine whether the student has mastered the minimal core curricular performance objectives. To this end, the Project has begun the development of achievement tests for all the primary and secondary core curricular areas. At this time, only incomplete, preliminary achievement tests have been developed. As this activity was not specifically mentioned in the Contractual Scope of Work Items, SDRMP funds have been used for most of this development. During the next two years, the achievement tests will be completed, evaluated, refined and normed. It is expected that the achievement tests could potentially serve as challenge examinations and as instruments to evaluate instructional methods, curricular content and domains of student performance weaknesses and strengths.

Continued career mobility efforts directed at the professional curricula resulting in modifications of professional content, course reorganization and possibly modularization of courses should create additional opportunities for students to receive both academic credit and advanced placement. These developments would certainly augment the challenge system in increasing student career mobility options and opportunities in health occupations education within South Dakota.

H. RESOURCE AND INSTRUCTIONAL MATERIALS

The Project staff has collected and filed numerous federal, state and other publications, most of them at no cost, during the entire four-year period of the Contract. During the last two years of the Contract, a number of textbooks, mostly complimentary copies, covering primary and secondary core curricular areas have been collected by the Project staff. These materials have been used as resource materials by the Project staff and at Project workshops. A selection of potential core curricular texts was displayed at the May, 1975 HMTF Workshop. Occasionally, resource and textual materials have been loaned to health occupations educators.

The Core Curriculum Project staff has worked cooperatively, as previously mentioned, with SDCHP in the preparation of South Dakota health manpower resource materials, and with the SDRMP in preparing a slide-tape presentation and posters on South Dakota health occupations training opportunities to be used for career guidance for South Dakota secondary education students.

A portion of the May, 1975 HMTF Workshop was devoted to the identification of instructional materials (case histories for educational purposes, definitions, statistical compilations, bibliographies, etc.) which need to be prepared or collected to more adequately teach the primary and secondary core curricula. Preparation and collection of these materials as well as the development of a mechanism for their distribution will be accomplished during the next two-year period.

I. MISCELLANEOUS ACTIVITIES

The Core Curriculum Project was instrumental in the recent selection of South Dakota to be one of the ten DHEW Regional recipients of Health Manpower (Linkage) Contracts. Basically, this is because of the successful methodology which has been established by the Project including the identification of many of the linkages requisite to health manpower planning, the interest and preliminary involvement of the Project in efforts to provide a health manpower data base for planning activities, and the in-depth involvement the Project has had in the identification and modification of health manpower resources in South Dakota. The Project staff looks forward to continued cooperation with the Linkage Project as South Dakota attempts to meet health manpower challenges in an increasingly more rational and informed manner.

The Project has worked cooperatively with the SDRMP in the establishment of a Statewide Community Health Education System (SD-CHES) for the purpose of providing continuing education to health care delivery system employees. Hopefully, cooperative ventures between SD-CHES and the South Dakota associated health and nursing educational programs will eventually provide a complete system of health resource development within South Dakota.

The Project has provided South Dakota health occupations educators with training in task inventory analysis, curriculum development including the construction of performance objectives, selecting learning activities, and in planning, implementing and evaluating learning strategies.

J. SUMMARY

During the past four years, the South Dakota Statewide Core Curriculum, Career Ladder and Challenge System Project has established a Health Manpower Task Force whose members are increasingly willing and able to make health resource developmental decisions and policies. Subcommittees of the HMTF have been formed and utilized to meet Project objectives. Plans are underway to create an Advisory Group including an Executive Committee and all necessary subcommittees to meet the needs of both the Core Curriculum Project and the Health Manpower (Linkage) Project. Communications among health occupations educators, health occupations workers, health related organizations and state agencies have visibly and dramatically improved during the tenure of the Project.

Topical outlines and performance objectives for three primary and six secondary core curricular areas have been written, refined and are now being implemented by associated health and nursing programs within South Dakota. The Project has been informed that portions of these curricula may also have been adopted outside of South Dakota.

A good start has been made towards optimizing career mobility options and opportunities for South Dakota health occupations students through the use of the core curricula and via preliminary career mobility studies in the medical laboratory and nursing areas.

Initial steps have been taken towards the establishment of a challenge system including the preliminary development of achievement tests for the primary and secondary core curricula.

Health occupations resource materials have been prepared, collected and distributed. Educational materials needed to adequately teach the primary and secondary core curricula have been identified, and plans have been made for their preparation and collection.

Progress has been made in the development of a complete health occupations educational system within the state including continuing education, and to link the health manpower resource area with effective health manpower demands to produce a rational, viable health manpower plan for the State of South Dakota.

Training has been provided to South Dakota health occupations educators in curriculum planning, development and utilization.

The Project has become a recognized resource in the state on health manpower resource development, not only among the associated health and nursing programs, but also among the health related associations and state agencies. Increasingly, the Project is also consulted by out-of-state institutions and agencies concerning health manpower development.

Including the suggested plan for long range continuation of the Core Curriculum Project in Part V of this report, it is believed that the Contractual obligations have been satisfied.

V. FUTURE PLANS AND EVALUATION

Much has happened since 1967 when a few persons in South Dakota became concerned about health manpower problems and solutions within the state. Some of the problems are now being solved, but unfortunately, many persist, and a few new ones have been identified. The Core Curriculum Project has helped to stimulate health manpower activity within the state. The recent establishment of a four-year medical school, the SDRMP development of a Statewide Community Health Educational System, the cooperative efforts of SDRMP and SDCHP under guidance of the Regional Advisory Group, the overall support of the South Dakota Health Department under the able guidance of Dr. Robert Hayes, and the recently acquired Health Manpower (Linkage) Contract have and continue to promise greater progress in South Dakota in meeting its health manpower challenges.

It was recognized a year ago that although a considerable amount of progress had been made by the Core Curriculum Project, the development of a Statewide Core Curriculum, Career Ladder and Challenge System would still be incomplete upon the termination of this Contract. Even though it was likely that some of the Project activities would continue, retirement of the Project was premature. Consequently, efforts were initiated to secure additional funding for the Project after the lapse of this Contract. Fortunately, the Project was successful in securing a new Contract from the U.S. Public Health Service, Division of Health Resources Development, Region VIII (Contract No. 298-75-0005) for the sum of $175,000 for the period of June 21, 1975 through June 20, 1977. Further supplemental funding has been secured from the SDRMP for the period of July 1, 1975 through June 30, 1976. With encouragement from the Project, the 14 South Dakota nursing education programs have secured funding from the SDRMP for the period of August 1, 1975 through April 30, 1976 and submitted a five-year grant proposal to the Division of Nursing, Bureau of Health Manpower, DHEW to continue the development and implementation of career mobility options in nursing.

A work plan has been prepared for Core Curriculum Project activities during the next two years.[16] Some of the planned activities are:

1. To expand the Health Manpower Task Force into an Advisory Group to meet the needs of both the Core Curriculum Project and the Health Manpower (Linkage) Contract,
2. To explore the feasibility of incorporating the primary core curriculum into secondary educational programs,
3. To continue testing, implementing, evaluating and refining the primary and secondary core curricula,
4. To complete the construction, evaluation, refinement and norming of achievement tests for the primary and secondary core curricula,
5. To continue the identification, preparation and collection of instructional materials required to adequately teach the primary and secondary core curriculum,

6. To initiate the development of increased career mobility options and opportunities for South Dakota associated health students, and

7. To plan for continuation of the Project activities and results after June 20, 1977.

As always, these activities are subject to the goal of providing quality health occupations education at reasonable cost to the students and the state.

Evaluation of the Project can be viewed in at least two ways. The successful compilation of its Contractual obligations is quite simple. All one needs do is compare the Contractual Scope of Work Items with the Project activities and results as was done in Part IV.

A complete assessment of the impact that the Core Curriculum Project has had upon the recruitment, training and distribution of health manpower in South Dakota is much more difficult and would require a rather substantial investment of time and resources. There are, however, certain indicators which may supply indirect evidence of the degree of the Project's success in these areas.

With regard to recruitment of students into health occupations it is known that the Health Careers Directory, Health Manpower Resources Documents (in cooperation with SDCHP), and health careers slide-tape presentation and posters (in cooperation with SDRMP) have been requested (and presumably used) by numerous South Dakota junior and senior high school guidance counselors. There is interest, and some preliminary activity, towards holding health career days or fairs in South Dakota for senior high school students. It is known that the percentage of South Dakota college and vocational-technical students who are planning health and medical careers has increased during the past four years. Undoubtedly, this would have occurred in the absence of the Project, but at the same time it is certain that the existence of the Project has had a positive effect on this trend. The only question now is how to secure sufficient clinical training for these students. As expressed earlier, it is believed that proper implementation of the primary core curricula would be great help to students in making wise health career choices.

The education of associated health and nursing students has also changed during the past four years. The phasing out of certain programs, more rational expansion of old programs, more informed selection of new programs to be developed, and consolidation of programs can only be viewed as being favorable. The Project has been directly or indirectly involved in most of these decisions. Programs and institutions are cooperating much more in health occupations education than they ever have before. Meetings which used to be forums for defensive and back-biting oratory now are relatively peaceful and constructive. The administration of our health occupations programs has improved, both through better informed coordinators, chairmen and deans and through the appointment of designation of concerned individuals to be responsible for health occupations education. It used to be that some of our associated health programs were directed by uninformed individuals who had little interest in the programs they directed. It is probably fair to say that essentially all of these persons have now been either replaced or re-educated. There is greatly increased emphasis on the health occupations curricula being offered largely because of the Project. In many cases, courses and course requirements have been modified.

This should be beneficial to the student, also one would hope to the future health care delivery system. The development by SDRMP with input by the Project of a statewide continuing educational system for health workers over a period of four years from ground zero to respectability has had demonstrable benefits. Health workers have been taught to perform new tasks which either were not done before or required patient transferral or consultation. Health workers have been taught new methods and procedures. The entire emergency care system in the state has undergone a tremendous change over the past four years, mostly through the efforts of the SDRMP and the South Dakota Health Department, but the presence of emergency medical care in the primary core can only be supportive of this effort.

This is not to say that health occupations training in South Dakota is all good. There are many problems still in existence which need to be solved. Improved planning for the development of our health resources and improvement in the quality of education in some programs are two problems requiring attention.

Distribution of health workers in South Dakota is the area in which the Project to date has had the least impact. This is a very complex problem, as everyone knows. The nurses seemed to come to grips with some of the maldistribution ramifications concerning nursing during the past year. The Statewide Continuing Health Education System has helped by training existing workers to do new tasks. The Project staff are optimistic that in cooperation with the Health Manpower (Linkage) Project a better job can be done. The lack of sufficient, adequate effective health manpower demand data together with a statewide health manpower plan has been a great handicap. Hopefully, both will be available in two or three years. One thing the Core Curriculum Project has done which will be useful is the establishment of an effective communications network, the development of greater awareness of the problem, and the identification and cultivation of some of the linkages needed to tackle the distribution problem.

The methodology used by the Project in which the users of the product actually develop the project is believed to be a very sound approach. It is thought that any other approach would have required dictatorial-like authority to accomplish implementation. Since the Project is invested only with the authority to persuade, facilitate and coordinate, a grassroots developmental approach still seems to be the best method. In the process, a rather substantial pool of expertise in health occupations education has been developed in South Dakota.

Finally, on behalf of all the South Dakota associated health and nursing program faculty and students, the Project staff wishes to extend their gratitude to the Bureau of Health Manpower, U.S. Public Health Service, DHEW, for past and continued financial support of this Project, and to the Federal and Region VIII BHRD staffs for their encouragement and assistance during these past four years.

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FINAL REPORT - VOLUME II

of the
SOUTH DAKOTA STATEWIDE CORE CURRICULUM, CAREER LADDER AND CHALLENGE SYSTEM

for the period of
June 21, 1971 - June 20, 1975

Donald G. Brekke, Director
Wayne M. Gildseth, Associate Director

Funded by

Bureau of Health Manpower, Division of Associated Health Professions, Health Resources Administration, U.S. Public Health Service, Department of Health, Education and Welfare (Contract No. N01 AH 14158)

and

South Dakota Regional Medical Program

CE006918

Date of Report: September 10, 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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APPENDIX A

SCOPE OF WORK ITEMS OF CONTRACT NO. N01 AH 14158

ARTICLE I. Scope of Work

A. The Contractor shall furnish the personnel, materials, equipment and facilities necessary to develop statewide core curriculum for health manpower training programs in South Dakota and a mechanism for obtaining acceptance of this curriculum by the educational community in the State.

B. In pursuance of the above, the Contractor shall specifically:

1. Identify each existing and newly established health manpower training program in the State.

2. Furnish information concerning this project to and solicit the support of this concept from:

    a. Program directors from those programs identified in paragraph B.1. above.

    b. Officials of recognized health organizations within the State, both public and private.

    c. Such other organizations and groups as deemed appropriate.

3. Secure and maintain resource materials which shall include educational materials, catalogs and other related reference documents deemed necessary.

4. Establish a Health Manpower Council, representative of the health manpower training programs in the State, the function of which shall be:

    a. Serve as an advisory body to the Project Director for the development and implementation of core curriculum.

    b. Form subcommittees which will define the areas of basic commonalities among the various health occupations training programs and develop the educational content of the core curriculum.

C. The Contractor shall furnish the personnel, materials, equipment and facilities necessary to continue the development of, and to implement a statewide core curriculum for health manpower training programs and to assist in the coordination of health manpower training efforts in South Dakota.

D. In pursuance of the above, the Contractor shall specifically:

1. Develop instructional units, including teaching materials and statements of behavioral objectives, which are designed to implement instruction in those areas of basic commonalities among the various

health occupations training programs in the State which were identified under the initial scope of work under this contract.

2. As an ongoing effort, determine additional commonalities of previously identified health occupations training programs, and, as is appropriate for the respective programs, incorporate these commonalities into the instructional units developed under paragraph B.1. above, or develop additional instructional units.

3. Conduct a series of not less than four workshops for the purpose of acquainting health occupations teachers with the instructional units developed under paragraphs D.1. and D.2. above, and with the health occupations career training lattice which has resulted from initial development of the statewide core curriculum. The timing and content of these workshops shall be subject to prior approval by the Project Officer.

4. Maintain at a central repository teaching and other resource materials which shall be available for use by institutions participating in the core curriculum.

5. Establish a task force on health manpower which shall be representative of health training programs, state agencies, Comprehensive Health Planning, and other private and voluntary organizations which have an interest in the recruitment, training, and distribution of health manpower, particularly allied health manpower, in South Dakota. This task force may be established by modifying the Health Manpower Council which was established under the initial scope of work under this contract. The task force shall:

    a. Be advisory to the Education and Cultural Affairs Planning Commission of the South Dakota Department of Education and Cultural Affairs on matters which are related to health occupations education and which are commensurate with the objectives of the Core Curriculum Project, and shall include in its membership at least one member of the Commission.

    b. Serve as an advisory body to the Project Director for the further development and implementation of the core curriculum.

    c. Establish working subcommittees with membership derived either from the task force or appropriate other groups or individuals approved by the task force, to continue to define the areas of basic commonalities among the various health occupations training programs and to develop the educational content of the core curriculum, and to carry out the other functions of the task force.

    d. Prepare assessments of health manpower, particularly allied health manpower, needs and resources in South Dakota. Such assessments shall be completed using information and data from secondary sources, and shall not involve original data collection unless plans for such data collection have been approved in advance by the Project Officer.

e. Formulate recommendations for reconciling health manpower needs and resources in South Dakota.

f. Serve as liaison between public, private, and associated educational institutions and programs.

g. Analyze and report on, and make recommendations regarding problems of recruitment, training, and distribution of health manpower in South Dakota.

h. Be structured to include:

   (1) An Executive Secretary (Project Director) who shall also serve as Core Curriculum Coordinator, an Associate Director, and such other staff as deemed appropriate by the Project Director.

   (2) Educational and other technical assistance which may be acquired through use of consultants.

   (3) An Executive Committee, of not more than 15 members, which shall be formed with membership derived from the task force.

i. Meet as deemed appropriate by the Project Director.

E. In connection with and as part of the work and services to be performed hereunder, the Contractor shall furnish to the Project Officer the following:

1. Semi-annual progress reports, in two copies, which shall give an account of work accomplished to date, important problems encountered, and how these problems were resolved including the following:

   a. Documentation of administrative and operational problems associated with implementation of the core curriculum.

   b. Documentation of administrative and operational problems associated with the health manpower task force.

   c. Copies of any materials developed by the Core Curriculum Project or by the health manpower task force.

   d. Copies of workshop proceedings to be submitted within 60 days of the date of the workshop.

2. A final report, in two copies, which shall include, but not necessarily be limited to the following:

   a. Documentation similar to that developed for the progress reports.

   b. A suggested plan for long-range continuation of the Core Curriculum effort and the health manpower task force.

   c. An assessment of the impact of the Core Curriculum effort and health manpower task force upon the recruitment, training, and distribution of health manpower in South Dakota.

APPENDIX B

COOPERATING INSTITUTIONS WITH ASSOCIATED HEALTH AND NURSING PROGRAMS

INSTITUTIONS

Colleges and Universities

1. Augustana College, Sioux Falls
2. Black Hills State College, Spearfish
3. Dakota State College, Madison
4. Dakota Wesleyan University, Mitchell
5. Freeman Junior College, Freeman
6. Mount Marty College, Yankton
7. Presentation College, Aberdeen
8. Northern State College, Aberdeen
9. Sioux Falls College, Sioux Falls
10. South Dakota School of Mines, Rapid City
11. South Dakota State University, Brookings
12. University of South Dakota, Vermillion
13. University of South Dakota/Springfield, Springfield

Vocational Technical Schools

1. Black Hills Area School, Rapid City
2. Lake Area School, Watertown
3. Mitchell Area School, Mitchell
4. South East Area School, Sioux Falls

Hospitals

1. McKennan Hospital, Sioux Falls
2. Rapid City Regional Hospital, Rapid City
3. Sacred Heart Hospital, Yankton
4. Sioux Valley Hospital, Sioux Falls
5. St. Luke's Hospital, Aberdeen
6. St. Mary's Hospital, Pierre

(Three other hospitals - St. Joseph's Hospital and Methodist Hospital at Mitchell and Watertown Memorial Hospital at Watertown - are indirectly involved in that they have formal agreements for clinical training with academic institutions, but they have no independent program offerings.)

Associated Health and Nursing Programs

	Type of Program	Number of institutions offering the program
1.	Child Care Worker Technician	1
2.	Dental Assistant	1
3.	Dental Hygiene	1
4.	Dental Technician	1
5.	Dietetic Technician	1
6.	Dietetics/Nutrition	1
7.	Gerontology Assistant and Geriatrics Technician	1
8.	Geriatrics Technician	1
9.	Health and Hospital Services Administration	2
10.	Administration of Long Term Health Care Facilities	1
11.	Medical Assistant	1
12.	Medical Librarian and Associated Programs	1
13.	Medical Social Services	1
14.	Certified Laboratory Assistant	2
15.	Medical Laboratory Technician	2
16.	Medical Technology (Pre-Clinical)	7
17.	Medical Technology (Clinical)	5
18.	Licensed Practical Nursing	6
19.	Associate Degree, R.N.	3
20.	Diploma, R.N.	2
21.	Baccalaureate, R.N.	3
22.	Pharmacy	1
23.	Physical Therapy (Pre-Clinical)	4
24.	Psychiatric Technician	1
25.	Public Health Science	1
26.	Radiologic Technology	7
27.	Respiratory Therapy Technician	2
28.	Respiratory Therapy	3
29.	Nurse Anesthesist	2
	TOTAL	65

APPENDIX C

CURRENT MEMBERSHIP OF THE HEALTH MANPOWER TASK FORCE

HEALTH MANPOWER TASK FORCE MEMBERS

Institution and Program	Representative
Augustana College:	
Health and Hospital Services Administration	Elliot Thoreson
Medical Technology (Pre-Clinical)	Milton Hanson
Nursing (Baccalaureate RN)	Mary Auterman
Physical Therapy (Pre-Clinical)	Harold Foss
Respiratory Therapy (Pre-Clinical)	Harold Foss
Black Hills State College:	
Medical Technology (Pre-Clinical)	Gerald Schryrock
Physical Therapy (Pre-Clinical)	Cecil Haight
Dakota State College:	
Medical Librarian	Connie Churchill
Dakota Wesleyan University:	
Medical Laboratory Technician	Loran Hills
Nursing (Associate Degree RN)	Faith Hubbard
Radiologic Technology	William Houk
Freeman Jr. College:	
Nursing (LPN)	Sharon Waltner
Mount Marty College:	
Health and Hospital Services Administration	Sr. Harriet Gobel
Medical Social Services	Sr. Harriet Gobel
Medical Technology	Jacqueline Quick
Nurse Anesthesist	Sr. Virgil Koch
Nursing (Baccalaureate RN)	James Sorensen
Respiratory Therapy	Sr. Mary Arthur Schramm
Presentation College:	
Administration of Long Term Health Care Facilities	Charles Prochaska
Child Care Worker Technician	Sr. Maurice Crowley
Dietetic Technician	Sr. Jane Frances Lamm
Medical Laboratory Technician	Sr. Veronica Ogden
Medical Secretary	Marilyn Finley
Nursing (Associate Degree RN)	Sr. Annrita Johnson
Radiologic Technology	Charles Prochaska
Northern State College:	
Medical Technology (Pre-Clinical)	Gertrude Miller
Sioux Falls College:	
Medical Technology (Pre-Clinical)	Jon Christensen
South Dakota School of Mines:	
(Serve nursing at Rapid City Regional Hospital)	Sr. Marmion Howe

South Dakota State University:	
Dietetics	Wayne Johnson
Medical Technology (Pre-Clinical)	Henry Gehrke
Nursing (Baccalaureate RN)	Sharon Hofland
Pharmacy	Raymond Hopponen
Physical Therapy (Pre-Clinical)	James Booher
Public Health Science	Charles Blazey
University of South Dakota:	
Dental Hygiene	Darrell Ludeman
Medical Technology (Pre-Clinical)	Dona Knapp
Nursing (Associate Degree RN)	Ben Suga
Physical Therapy (Pre-Clinical)	Marty Jewell
USD/Springfield:	
Gerontology Assistant	Leon Kreiner
Psychiatric Technician	Leon Kreiner
Black Hills Area Vocational Technical School:	
Nursing (LPN)	Ruth Rea
Lake Area Vocational Technical School:	
Certified Laboratory Assistant	Pauline Carr
Dental Assistant	Mary Daniels
Dental Laboratory Technician	Donovan Walters
Geriatrics Technician	Jeanette Bergh
Medical Assistant	Elva Sigurdson
Nursing (LPN)	Doris Olderr
Radiologic Technology	Melvin Platt
Mitchell Area Vocational Technical School:	
Certified Laboratory Assistant	George Bamsey
Nursing (LPN)	Sr. Dominic Stoltz
South East Area Vocational Technical School:	
Nursing (LPN)	Connie Weber
Related Health Occupations Course	Deloris McDonald
McKennan Hospital:	
Medical Technology (Clinical)	Delores Sauer
Nurse Anesthesist	Russell Schreiber
Radiologic Technology	Charlotte Clark
Respiratory Therapy	Steve Hatlestad
Respiratory Therapy Technician	Steve Hatlestad
Rapid City Regional Hospital:	
Medical Technology (Clinical)	Mary Anderson
Nursing (Diploma RN)	Sr. Therese Marie Furois
Radiologic Technology	Ronald Brown
Sacred Heart Hospital:	
Radiologic Technology	Mrs. Patrick Steele

Sioux Valley Hospital:	
Medical Technology	Evelyn Berg
Nursing (Diploma RN)	Richard Bohy
Radiologic Technology	Pat Redman
Respiratory Therapy	Gerald Moss
Respiratory Therapy Technician	Gerald Moss
St. Luke's Hospital:	
Medical Technology (Clinical)	Sr. Mary Joachim White
St. Mary's Hospital:	
Nursing (LPN)	Sr. Edna Nemec

Non-Program Representatives

South Dakota State Department of Health	Robert H. Hayes
South Dakota Comprehensive Health Planning Agency	Donald Kurvink
Emergency Medical Services	Frank Krogman
Health Manpower Linkage Project	Jerry McClendon
South Dakota Planning Agency	Ed DeAntoni
South Dakota Department of Education and Cultural Affairs	To be Named
South Dakota Board of Regents Office	Gordon Foster
South Dakota Board of Nursing	Margaret Cashman
Regional Advisory Group (SDRMP-SDCHP)	Robert Karolevitz
Regional Advisory Group (SDRMP-SDCHP)	Maralee Dennis

Selected Participating Non-Members

Joel Padmore, University of South Dakota
Sr. Mary Schneider, Sioux Falls
Kathryn Vigen, Sioux Falls
Sr. Mary Ellen Boehnke, McKennan Hospital
John Jones, Emergency Medical Services
Bernie Osberg, South Dakota Comprehensive Health Planning Agency
Ed Michalewicz, South Dakota State University
Marge Hegge, Regional Advisory Group (SDRMP-SDCHP)
Harriet Scott, Augustana College
Chester Whitney, Augustana College
Gaea Blue, Mount Marty College
Richard Blair, South Dakota Department of Health
Clyde Brashier, Dakota State College
Howard Taub, Charles Drew Medical School, Los Angeles
Phyllis Newstrom, Sioux Valley Hospital
Patsy Cox, St. Joseph's Hospital
Helen Lee, Presentation College
Francis Nickerson, USD Continuing Education

APPENDIX D

FORMAL VISITATIONS TO PROGRAMS AND INSTITUTIONS

July 28, 1971 -	Brekke met with Health Manpower Training Programs at South Dakota State University in Brookings
August 3, 1971 -	Brekke met with Health Manpower Training Programs in Watertown
August 4, 1971 -	Brekke met with Health Manpower Training Programs in Aberdeen
September 14, 1971 -	Brekke met with medical technology program at Black Hills State College, Spearfish; committee of concerned nurses, Sturgis; licensed practical nursing program, Black Hills Area Vocational Technical School, Rapid City
September 24, 1971 -	Brekke met with Academic Dean at Augustana College, Sioux Falls
December 6, 1971 -	Brekke met with nursing program at Presentation College, Aberdeen
February 14, 1972 -	Brekke met with Health Manpower Training Programs in Aberdeen
February 15, 1972 -	Brekke met with faculty at Lake Area Vocational Technical School, Watertown
February 17, 1972 -	Brekke met with Health Manpower Training Programs in Rapid City
May 9, 1972 -	Brekke met with nursing program at Presentation College, Aberdeen
May 10, 1972 -	Brekke met with nursing programs at Methodist Hospital and Mitchell Area Vocational Technical School in Mitchell and St. John's Hospital in Huron
May 11, 1972 -	Brekke met with nursing programs at Mt. Marty College in Yankton and at South East Area Vocational Technical School and Sioux Valley Hospital in Sioux Falls
May 12, 1972 -	Brekke met with nursing program at Augustana College, Sioux Falls
May 16, 1972 -	Brekke met with faculty from the three South Dakota baccalaureate nursing programs in Sioux Falls

May 17, 1972 -	Brekke met with the nursing programs at Lake Area Vocational Technical School, Watertown and South Dakota State University, Brookings
May 18, 1972 -	Brekke met with nursing programs at St. John's McNamara Hospital and Black Hills Area Vocational Technical School in Rapid City
May 26, 1972 -	Brekke met with nursing program at University of South Dakota, Vermillion
August 2, 1972 -	Brekke met with health manpower training programs in Rapid City
October 5, 1973 -	Gildseth met with faculty at Mt. Marty College, Yankton
October 25, 1973 -	Gildseth met with students and faculty of South East Vocational Technical School and Augustana College in Sioux Falls
November 15, 1973 -	Brekke and Gildseth met with faculty at South Dakota State University, Brookings
February 12, 1974 -	Brekke and Gildseth met with faculty at Presentation College in Aberdeen
February 13, 1974 -	Gildseth met with administrators at Northern State College, Aberdeen
April 5, 1974 -	Gildseth met with College of Nursing faculty of South Dakota State University at a meeting in Sioux Falls
July 15, 1974 -	Gildseth met with selected faculty and administrators from University of South Dakota in Vermillion
August 22, 1974 -	Gildseth met with faculty of Presentation College in Aberdeen

The above compilation is reasonably complete as far as formal visitations by Donald Brekke and Wayne Gildseth are concerned. In addition, Sr. Mary Schneider, a part-time staff member of the Project during the 1973-74 academic year, formally visited one or more times with medical laboratory programs in 9 hospitals, 11 colleges and universities and 2 vocational technical schools. Kathryn Vigen, a staff member of the Project during the 1974-75 academic year, formally visited one or more times with nursing programs in 3 hospitals, 7 colleges and universities and 4 vocational technical schools. Finally, Brekke and Gildseth have had numerous formal and informal meetings concerning the Project with individuals or small groups of individuals from associate health and nursing programs, state agencies and health organizations which do not appear in the above compilation.

APPENDIX E

MEETINGS, WORKSHOPS AND CONFERENCES ATTENDED AND CONDUCTED

SELECTED MEETINGS, WORKSHOPS AND CONFERENCES

August 30, 1971 - Brekke attended meeting of South Dakota Nurses' Association Subcommittee on Nursing Resources and Services

September 23, 1971 - Brekke attended South Dakota Hospital Association Meeting in Sioux Falls

September 27, 1971 - Brekke conducted meeting of representatives of all South Dakota health manpower training programs in Sioux Falls

October 5, 1971 - Brekke spoke at South Dakota Nurses' Association Annual Convention in Yankton

October 12, 1971 - Brekke spoke at Nurses' Association District Meeting in Redfield

November 1, 1971 - Brekke spoke at Nurses' Association District Meeting in Mitchell

November 3-6, 1971 - Brekke attended Annual ASAHP Meeting in Atlanta, Georgia

November 12, 1971 - Brekke spoke at Annual Conference of the South Dakota Association of Psychiatric Technology in Yankton

November 16, 1971 - Brekke conducted meeting of nursing subcommittee of HMC in Pierre

December 7, 1971 - Brekke conducted meeting of anesthesia, inhalation therapy and nurse anesthesist subcommittee of HMC in Sioux Falls

December 13, 1971 - Brekke conducted meeting of Academic Deans of South Dakota colleges and universities in Sioux Falls

December 14, 1971 - Brekke conducted meeting of medical laboratory subcommittee of HMC in Sioux Falls

December 16, 1971 - Brekke conducted meeting of nursing subcommittee of HMC in Sioux Falls

December 20, 1971 - Brekke conducted meeting of the dental auxiliary subcommittee of HMC in Sioux Falls

January 4, 1972 - Brekke conducted meeting of the dietician, dietetic technician, nursing home administration and physical therapy subcommittee of HMC in Sioux Falls

January 24, 1972 - Brekke conducted meeting of the medical secretary and medical assistant subcommittee of HMC in Sioux Falls

January 27, 1972 - Brekke attended Conference on New Allied Health Laws in Salt Lake City, Utah

February 15, 1972 - Brekke spoke to the District Nurses' Association Meeting in Watertown

February 16, 1972 - Brekke spoke to the District Nurses' Association Meeting in Rapid City

February 21, 1972 - Brekke conducted meeting of the nursing subcommittee of HMC in Sioux Falls

March 10, 1972 - Brekke conducted meeting of medical laboratory subcommittee in Sioux Falls

April 5, 1972 - Brekke attended Special Training Conference for Health Education Programs in Santa Monica, California

April 6-7, 1972 - Brekke met with consultants to the Project in Los Angeles, California

May 1-5, 1972 - Brekke spoke to "Focus on Allied Health Education - The 70's" at Ferris State College in Big Rapids, Michigan

May 12, 1972 - Brekke conducted meeting of medical laboratory subcommittee in Sioux Falls

May 18, 1972 - Brekke spoke at the South Dakota LPN Conference in Spearfish

May 21-24, 1972 - Brekke attended the RMPs National Allied Health Conference in Sun Valley, Idaho

July 19, 1972 - Brekke conducted a HMC meeting in Sioux Falls

August 13-18, 1972 - Brekke spoke at a health occupations meeting at the University of Wyoming, Laramie

August 25-28, 1972 - Brekke met with Project consultants in Los Angeles, California

September 14-16, 1972 - Brekke conducted annual HMC Workshop at the Black Forest Inn near Rapid City

October 2-4, 1972 - Brekke attended and spoke at the South Dakota Nurses' Association Convention

November 13, 1972 - Brekke conducted a HMTF Meeting in Sioux Falls

November 15-18, 1972 - Brekke and Gildseth attended the annual ASAHP Meeting in Houston, Texas

December 8, 1972 - Brekke and Gildseth conducted meeting with faculty representatives from South Dakota baccalaureate nursing programs in Yankton

January 11, 1973 - Brekke and Gildseth conducted meeting of Academic Deans of South Dakota colleges and universities in Pierre

March 13-16, 1973 - Gildseth attended ASAHP Training Institute on Administration of Allied Health Programs

April 10-11, 1973 - Brekke and Gildseth met with Project consultants in Los Angeles, California

April 12-14, 1973 - Gildseth attended the Council for Health Interdisciplinary Participation Conference at Grand Forks, North Dakota

May 3-4, 1973 - Brekke spoke at the University of Iowa Health Occupations Education Spring Teacher Education Workshop in Amana, Iowa

May 22-24, 1973 - Brekke and Gildseth conducted the annual HMC Workshop at the South Dakota State Game Lodge near Custer

August 15-17, 1973 - Gildseth attended the HEW Region V ASAHP Training Institute in Minneapolis, Minnesota

August 30 - September 1, 1973 - Brekke and Gildseth conducted a HMTF Subcommittee Workshop for Core Curriculum Development in Sioux Falls

September 20-21, 1973 - Brekke and Gildseth met with Project consultants in Los Angeles, California

October 11-13, 1973 - Brekke and Gildseth conducted a HMTF Subcommittee Workshop on Core Curriculum Development in Sioux Falls

October 28-31, 1973 - Gildseth attended HEW Regions VII and VIII Training Institute in Columbia, Missouri

November 17-20, 1973 - Brekke and Gildseth attended the annual ASAHP meeting in Boston, Massachusetts

November 29 - December 1, 1973 - Brekke and Gildseth conducted a HMTF Subcommittee Workshop on Core Curriculum Development in Sioux Falls

January 7-8, 1974 -	Brekke and Gildseth attended a South Dakota Medical School Conference on Health Care Delivery
January 10-11, 1974 -	Brekke and Gildseth met with Project consultants in Los Angeles, California
January 31 - February 2, 1974 -	Brekke and Gildseth conducted a HMTF Subcommittee Workshop on Core Curriculum Development in Sioux Falls
February 21-23, 1974 -	Brekke and Gildseth conducted a HMTF Subcommittee Workshop on Core Curriculum Development in Sioux Falls
February 25-March 1, 1974 -	Brekke and Gildseth attended and spoke at a National Conference on Health Occupations Education in Oklahoma City, Oklahoma
March 20-22, 1974 -	Brekke and Gildseth attended a National Conference on Health Manpower in San Francisco, California
April 17, 1974 -	Schneider conducted a HMTF medical laboratory subcommittee meeting in Sioux Falls
May 9-10, 1974 -	Brekke and Gildseth met with Project consultants in Los Angeles, California
May 28-31, 1974 -	Brekke and Gildseth conducted the annual HMTF Workshop at the Black Forest Inn near Rapid City
August 15-16, 1974 -	Gildseth spoke at the Health Occupations Conference at the annual South Dakota Vocational Technical School Meeting in Sioux Falls
August 27, 1974 -	Brekke and Gildseth attended the Health Manpower Meeting at the National Comprehensive Health Conference in Minneapolis, Minnesota
September 13, 1974 -	Brekke and Gildseth conducted a HMTF nursing subcommittee meeting in Sioux Falls
September 13, 1974 -	Vigen conducted a meeting of the HMTF nursing subcommittee in Sioux Falls
September 25, 1974 -	Vigen conducted a Nursing Options for Career Mobility Task Force (NOMTF) Meeting in Sioux Falls
October 6-10, 1974 -	Vigen attended the National League of Nursing Convention on Open Curriculum in New York City, New York
November 13, 1974 -	Vigen conducted an NOMTF Meeting in Sioux Falls

January 24, 1975 -	Brekke and Gildseth conducted a HMTF Subcommittee Meeting for Achievement Test Development in Sioux Falls
January 29-30, 1975 -	Vigen conducted an NOMTF Workshop in Sioux Falls
February 13, 1975 -	Vigen conducted an NOMTF Meeting in Sioux Falls
February 26-27, 1975 -	Vigen conducted a statewide nursing meeting in Sioux Falls
March 2-8, 1975 -	Vigen met with Project consultants in San Francisco and Chico, California; Ogden and Salt Lake City, Utah; and in Pocatello, Idaho
March 20, 1975 -	Vigen conducted an NOMTF Meeting in Sioux Falls
March 20- 1, 1975 -	Brekke and Gildseth conducted a HMTF Subcommittee Workshop on Achievement Test Development in Sioux Falls
April 29-30, 1975 -	Vigen conducted a HMTF nursing subcommittee workshop in Sioux Falls
May 27-28, 1975 -	Vigen conducted an NOMTF Meeting at the South Dakota State Game Lodge near Custer
May 28, 1975 -	Vigen conducted a HMTF nursing subcommittee meeting at the South Dakota State Game Lodge near Custer
May 29-31, 1975 -	Brekke and Gildseth conducted the annual HMTF Workshop at the South Dakota State Game Lodge near Custer

The above compilation of meetings, conferences and workshops attended or conducted by Donald Brekke, Wayne Gildseth, Sr. Mary Schneider and Kathryn Vigen is reasonably complete.

APPENDIX F

TOPICAL OUTLINES OF 22 SELECTED COURSE AREAS

GENERAL BIOLOGY

1. Introduction to Biology

2. Ecology

3. Cell
    - structure and function
    - processes of life
    - chemistry of life
        - pH, ions
        - osmosis-diffusion
        - biological compounds (carbohydrates, lipids, proteins)

4. Genetics
    - RNA-DNA
    - protein synthesis
    - mitosis-meiosis
    - genetic code
    - Mendelian genetics
    - sex linkage
    - sex determination
    - alleles
    - linkage
    - crossover
    - recombination
    - mutation-adoptation-evolution
    - aberrations
    - trans location
    - differentiation
    - gene control-end product inhibition
    - biochemical genetics

5. Origin of Life - Diversity - Evolution

6. Metabolism
    - anaerobic respiration
    - aerobic respiration

7. Energy Flow
    - ATP production and utilization
    - enzyme dynamics

8. Photosynthesis
    - light and dark reaction

9. Homeostasis (Inclusion throughout entire course as applicable)

10. Simple Embryology

11. Introduction to Animal Development

HUMAN ANATOMY AND PHYSIOLOGY

1. Levels of Organization: Cells, Tissues, Organs, Systems, and Organism

2. Homeostasis at the Cellular and Organismic Levels

3. Cell Structure and Ultrastructure
   - nucleus
   - mitochondria
   - endoplasmic reticulum and ribosomes
   - golgi apparatus
   - membrane

4. Cell Function
   - mitosis and meiosis
   - DNA replication
   - protein synthesis
   - glycolysis
   - Kreb's cycle
   - electron transport enzymes
   - diffusion, osmosis, and active transport

5. Tissues
   - epithelial
   - connective
   - muscle: striated, smooth, and cardiac
   - nerve

6. Body Plan
   - bilateral symmetry
   - planes of the body
   - anatomical position
   - body cavities

7. Circulatory System
   - composition of body fluids: ions and proteins
   - body buffers
   - transport of oxygen and carbon dioxide
   - structure and function of hemoglobin
   - structure of the heart: tissue layers, chambers, and valves
   - function of the heart
   - pacemakers and the electrocardiogram
   - nervous and hormonal control of the heart and blood vessels
   - pulmonary, systemic, and fetal circulations
   - structure of arteries, veins and capillaries
   - blood pressure
   - kinds and functions of white blood cells
   - antigens and antibodies
   - blood groupings
   - blood clotting
   - lymphatic system: structure and function
   - reticuloendothelial system

8. Respiratory System
    - structure of the respiratory system
    - mechanism of breathing
    - autonomic control of respiratory rate
    - exchange of gases in the alveolus

9. Digestive System
    - structure of the digestive system
    - tissue layers in the walls of the digestive tract
    - digestive enzymes and their functions
    - movements in the digestive tract
    - absorption of food from the digestive tract
    - structure of the liver and liver lobule
    - function of the liver in digestion
    - gall bladder structure and function
    - transport of food to cells
    - metabolism of food by cells
    - basal metabolism

10. Excretory System
    - structure of the digestive system
    - microscopic structure of the kidney: the nephron
    - special circulation in the kidney
    - filtration, reabsorption, and secretion
    - hormonal control of the kidney: ADH and aldosterone
    - urea and uric acid synthesis and excretion

11. Reproductive System
    - structure of the male and female reproductive systems
    - reproductive hormones: pituitary gonadotrophic hormones
    - reproductive hormones from testes, ovary, and placenta
    - menstrual cycle
    - spermatogenesis and oogenesis
    - fertilization
    - embryonic development
    - inheritance of genetic characteristics

12. Endocrine System
    - structure of the endocrine system
    - hypothalamic-pituitary complex
    - pituitary hormones and their effects
    - endocrines which affect metabolism, blood sugar, and ionic balance: thyroid, parathyroid, adrenal cortex and medulla, pancreas
    - homeostatic mechanisms controlling endocrine glands

13. Autonomic Nervous System
    - divisions of the autonomic nervous system
    - structural organization of the autonomic nervous system
    - location of autonomic ganglia
    - neurotransmitters of the autonomic nervous system
    - functions of the sympathetic division
    - functions of the parasympathetic division

14. Voluntary Nervous System
   structure of a neuron
   central and peripheral divisions of the voluntary nervous system
   structure of the brain
   functions of various parts of the brain
   structure of the spinal cord
   functions of the spinal cord
   reflex arc
   structure and functions of the cranial nerves
   nerve-nerve and neuromuscular synapses
   ultrastructure of a synapse
   transmission of impulses across a synapse
   intraneuronal transmission of impulses

15. Senses
   structure of the eye
   ultrastructure of the retina
   physiology of vision
   structure of the ear
   physiology of hearing and equilibrium
   structure and function of chemoreceptors: smell and taste
   structure and function of mechanoreceptors: touch, pressure, and pain

16. Muscle
   names of muscles and their locations
   physiology of skeletal muscle contraction: molecular level
   physiology of skeletal muscle contraction: treppe, contracture, summation, fatigue
   physiology of smooth muscle contraction
   innervation of skeletal and smooth muscles
   effects of hormones on smooth muscle

17. Bone
   names and location of bones: axial and appendicular skeleton
   structure of bones
   formation of bone
   growth of bones
   joints

18. Integument
   layers of tissue forming skin
   functions of the skin
   glands in the skin

19. Physiological Adjustment to the Environment
   body temperature: production, distribution and loss of heat
   body temperature: regulatory mechanisms
   water and electrolyte balance: fluid intake and loss, body fluid compartments, role of hormones
   stress: role of the pituitary gland and the General Adaptation Syndrome
   effect of environmental pressures (i.e., noise and crowding) on normal physiology

20. Definition of "Alive" or "Live"

MICROBIOLOGY

1. History

2. Microscope

3. Protists as living systems
   - properties
   - history
   - nomenclature
   - classification

4. Characteristics of Bacteria
   - physiology
   - anatomy-molecular biology
   - organization
   - nutrition
   - metabolism
   - enzymes
   - cultivation-techniques
   - biochemical tests
   - pure cultures
   - reproduction
   - growth
   - development
   - genetics
   - modification
   - cycles

5. Normal Flora

6. Fungi-Molds

7. Yeast

8. Viruses
   - molecular biology
   - pathogenesis
   - tumor
   - immunity
   - interferon
   - epidemiology
   - diagnosis

9. Richettsiae

10. Protozoa-Algae

11. Disease
    - host parasite relations
    - etiology
    - pathogens-properties
    - infection
    - immunity
    - resistance
    - transmission

12. Diseases of Animals

13. Diseases of Plants

14. Rumen & Silage Microbiology

15. Applied Microbiology
    - water sewage
    - dairy products
    - air
    - soil
    - food
    - industrial
    - environmental
    - biodegradation

16. Control
    - environmental
    - physical
    - chemical
    - biological

17. Bacteria
    - acid-fast
    - gram pos.
    - toxigenic
    - enterics
    - gram neg.
    - Spirochetes
    - PPLO
    - Pleuropneumonia

18. Pathogens
    - families
    - genera
    - morphology
    - cultural characteristics
    - habitat
    - species
    - pathogenicity
    - pathology
    - epidemiology
    - diagnosis
    - treatment

19. Immunology
    - host response to antigen-natured
    - host response to antigen-acquired
    - antibodies
        - physiochemical description
        - immunological tolerance
        - synthesis
    - allergic reactions
    - serology

precepitation
agglutination
lysis

20. Fungi-Systemic-Superficial

BIOCHEMISTRY

1. Chemical and Physical Organization of Cells
    - cell types - procaryotic and eucaryotic
    - cell organelles - structure and function
2. Water and Aqueous Solutions
    - general properties and structure
    - ionization
    - acids and bases
    - pH concept
    - buffers
3. Chemistry of Amino Acids and Proteins
    - amino acids
    - peptides
    - proteins
4. Enzymes and Catalysis
    - general characteristics
    - enzyme activity measurement
    - specificity
    - enzyme kinetics
    - enzyme mechanisms
5. Bioenegetics
    - properties of ATP and "high energy" coupounds
    - redox reactions and free energy
6. Chemistry of carbohydrates
    - monosaccharides
    - disaccharides
    - polysaccharides
7. Carbohydrate Catabolism
    - glycolysis and fermentation
    - entry into Embden - Meyerhof pathway
    - hexose monophospate shunt
    - Kreb's cycle
    - glyoxalate cycle
    - electron transport and oxidative phosphorylation
    - energy yield from glycolysis and respiration
    - entry of electrons from cytoplasmic NADH
8. Lipid Chemistry
    - structure, classification, and properties
    - separation and analysis of fatty acids
9. Lipid Catabolism
    - digestion and absorption
    - fatty acid oxidation
    - acetoacetate metabolism and ketosis
    - respiratory quotient and basal metabolism

10. Protein and Amino Acid Catabolism - Nitrogen Excretion
    - protein digestion
    - removal of alpha-amino nitrogen
    - nitrogen excretion

11. Nucleic Acid Chemistry

12. Purine and Pyrimidine Catabolism
    - pathways of degradation
    - excretory products
    - gout

13. Carbohydrate Biosynthesis
    - general principles in anabolism
    - gluconeogenesis
    - glycogen and starch syntheses
    - sugar interconversions
    - disaccharide biosynthesis

14. Lipid Biosynthesis
    - fatty acids
    - triglycerides
    - phospholipids
    - steroids

15. Amino Acid Biosynthesis
    - general principles
    - synthesis of nonessential amino acids
    - porphyrin biosynthesis

16. Protein Synthesis

17. Biosynthesis of Purines and Pyrimidines

18. DNA and RNA synthesis and Molecular Genetics

19. Control and Integration of Metabolism
    - general principles
    - control of carbohydrate and energy metabolism
    - control of amino acid and biosynthesis
    - control of purine and pyrimidine synthesis

20. Endocrine Glands and Hormones
    - thyroid and parathyroid glands
    - ovarian hormones
    - testicular hormones
    - adrenal hormones
    - pancreatic hormones
    - pituitary hormones

21. Nutrition
    - nutrition and nutritional requirements
    - water-soluble vitamins
    - fat-soluble vitamins

22. Blood
    plasma composition
    plasma proteins
    clotting
    erthrocytes and hemoglobin
    iron transport and metabolism

GENERAL CHEMISTRY

1. Origins

2. Basic Concepts

3. Math review

4. Physics review

5. Atoms
    - structure
    - symbols
    - electronic configuration
    - energy levels
    - wave-mechanical model

6. Periodic Table
    - families of elements
    - properties of elements

7. Compounds, Formulas, and Naming

8. Stoichiometry
    - atomic weights
    - molecular weights
    - mole concept

9. Molecular Structure and Bonding
    - electrovalent bonding
    - covalent bonding
    - metallic bonding
    - molecular orbitals

10. Chemical Equations
    - meaning
    - balancing
    - stoichiometric calculations

11. Chemical Reactions
    - types

12. Acids, Bases, and Salts
    - structure
    - properties

13. States of Matter
    - gases
    - liquids
    - solids

14. Solutions
    - concentration units
    - electrolytic solutions
    - non-electrolytic solutions
    - colligative properties

15. Chemical Equilibrium
    - equilibrium constants
    - ionic equilibrium
    - pH

16. Chemical Kinetics
    - rate constants

17. Thermochemistry

18. Electrochemistry

19. Chemical Families
    - hydrogen
    - oxygen
    - non-metal families
    - metal families

20. Carbon Chemistry

21. Coordination Compounds

22. Radiochemistry

23. Qualitative Analysis

ANALYTICAL CHEMISTRY

1. Review
    - stoichiometry
    - equivalence
    - concentration units

2. Error Analysis
    - precision and accuracy
    - determinent and indeterminant errors
    - propagation of errors
    - statistical treatment of errors

3. Acids and Bases
    - pH concept
    - strong acids and bases
    - weak acids and bases
    - polyprotic acids
    - salt hydrolysis
    - buffer systems
    - homeostasis
    - titration curves and titrations
    - use of pH meters

4. Gravimetric Analysis
    - solubility products
    - precipitation theory
    - filtration and ignition
    - specific methods

5. Volumetric Analysis
    - principles
    - standards
    - specific methods

6. Complexometric Analysis
    - coordination chemistry
    - coordination equilibria
    - specific methods

7. Electrochemistry
    - potentiometry
    - conductimetry
    - polarography
    - amperometry
    - electrodeposition

8. Spectrophotometry
    - visible and ultraviolet
    - infrared
    - emmission
    - atomic absorption
    - flame photometry
    - Raman

9. Separation Methods
   - distillation
   - extraction
   - precipitation
   - ion-exchange
   - column chromatography
   - gas chromatography
   - thin layer and paper chromatography
   - electophoresis

10. Miscellaneous Methods
    - radioisotope analysis
    - thermal analysis(DTA and TGA)
    - polarimetry
    - mass spectrophotometry (including GC-MS)

ORGANIC CHEMISTRY

1. Nomenclature and Classification
2. Structure
    - principles
    - properties
    - bonding
    - conformation
    - mechanisms
    - isomerism
    - stereochemistry
3. Reactions
4. Hydrocarbons
    - alkanes
    - cycloalkanes
    - alkenes
    - alkynes
    - aromatic
5. Alcohols
6. Phenols
7. Ethers
8. Organic Halides
9. Aldehydes and Ketones
10. Carboxylic Acids
11. Substituted and Unsaturated Acids
12. Fats, Oils, Soaps and Detergents
13. Amines
    - diazonium
    - dyes
14. Amino Acids
15. Drugs
16. Spectroscopy
    - infrared
    - visible - ultraviolet
    - mass spectrometry
    - nuclear magnetic resonance
    - electron spin resonance

COMMUNICATION ARTS

1. Language Arts
    - functional grammar
    - English language
2. Rhetoric/Composition Arts
    - pre-writing process
    - paragraph structure
    - composition/essay
    - methods of research
    - professional writing
    - logic
3. Imaginative Literature
    - types-general
    - types-special
    - uses of literature
4. Communication as Process
5. Levels of Speech Communication
    - intrapersonal
    - interpersonal
    - public communication

MATHEMATICS

I. ARITHMETIC SKILLS

1. Set Notation
2. Number Systems
3. Operations
4. Field Properties
5. The Decimal-Numeral System
6. Bases Other Than 10
7. Fractions
8. Percentage
9. Verbal Problems
10. Inequality
11. Averages
12. Modular Arithmetic
13. Square Root
14. Measurement and Denominate Numbers
15. The Nature of Approximate Numbers
16. Computation With Approximate Data
17. Using Numbers Expressed in Scientific Notation
18. Estimating

II. OTHER TOPICS IN ARITHMETIC

1. Evaluation of Formulas
2. Ratio and Proportion
3. The Slide Rule
4. Teaching Arithmetic With Calculating Machines
5. Arithmetic of the Shop
6. Consumer Arithmetic

7. Various Social Applications of Arithmetic

8. Simple Descriptive Statistics

III. ALGEBRA

1. Symbols and Formulas
2. Constants, Variables and Functions
3. Expressions
4. Polynomials
5. Linear Equations
6. The Evaluation and Solutions of Formulas
7. Graphs and Graph Reading
8. Directed Numbers
9. Simultaneous Linear Equations
10. Equation Solving
11. Solving of Verbal Problems
12. Inductive Reasoning in Problem Solving
13. Deductive Reasoning in Problem Solving
14. Products and Factoring
15. Exponents
16. Powers
17. Roots of Numbers
18. The Use of Parentheses
19. Determinants
20. Matrices
21. Quadratic Equations in One Unknown
22. Quadratic Equations in Two Unknowns
23. Arithmetic and Geometric Progressions

PHYSICS

1. Measurement

2. Mechanics
    - kinematics & dynamics
    - work & energy
    - conservation laws
    - rotational motion
    - oscillatary motion
    - wave motion

3. Thermodynamics
    - temperature
    - first and second law of thermodynamics
    - kinetic theory of gases

4. Electricity and Magnetism
    - Coulomb's law
    - electric fields
    - magnetic fields
    - electromagnetic fields

5. Light and Optics

6. Applied Electricity and Magnetism
    - simple circuits
    - electronics

7. Modern Physics
    - quantum physics
    - atomic structure
    - nuclear structure

GENERAL PSYCHOLOGY

1. What is Psychology?
    - definition
    - goals
    - history
    - methods
    - application

2. Biological Foundations of Behavior
    - reacting mechanisms
        - muscles
        - glands
    - relation of glands to behavior
    - nervous system
        - basic components and functioning
            - neuron
            - neural impulses
            - synapse
            - neural pathways and transmission
        - peripheral nervous system
        - central nervous system
            - spinal cord
            - brain
                - structure
                - function
            - brain and behavior
        - autonomic nervous system
            - structure (sympathetic and parasympathetic divisions)
            - function
    - psychophysiology
    - effects of drugs on behavior
    - heredity
        - chromosomes and genes
        - hereditary transmission
        - heredity and behavior
        - heredity vs. environment issue
        - chromosome anomalies

3. Sensation
    - definition
    - how the senses operate
    - vision
        - physical attributes of light
        - the eye
        - color vision
        - duplexity theory
        - theories of color vision
        - visual phenomena
    - audition

            physical attributes of sound
            the ear
            auditory sensations
            theories of hearing
            auditory phenomena
            taste
            smell
            skin senses
            body movement
            equilibrium

4. Perception
    - definition
    - perception and sensation
    - perceptual organization
    - selection and attention
    - visual perception
        - illusions
        - perception of depth and three-dimensions
        - perceptual constancy
    - auditory perception
    - stimulus characteristics and perception
    - the perceiver and perception
    - perception and learning
    - motivation and perception

5. Motivation
    - definition
    - biological or primary drives
    - stimulus-induced drives
    - learned drives
    - human motives
    - motivation and the brain
    - motivation, learning and behavior
    - theories of motivation

6. Conditioning and Learning
    - heredity versus environment issue
    - reflexes
    - instinct
    - imprinting
    - classical conditioning
        - basic phenomena
        - emotional conditioning
    - instrumental (operant) conditioning
        - reinforcement principle
        - basic phenomena
        - types of instrumental conditioning
            - reward
            - punishment
            - escape training
            - avoidance training
        - extinction
        - behavior shaping

  - variables influencing conditioning
  - instrumental versus classical conditioning
  - operant conditioning of autonomic functions
  - observational learning (imitation)
  - learning versus performance distinction
  - what is learned?
- reinforcement
  - primary reinforcement
  - secondary reinforcement
  - partial reinforcement
  - schedules of reinforcement
  - reinforcement and the brain
  - theories of reinforcement
- behavior modification
  - definition
  - techniques
- chaining
- discrimination
- complex learning
- motor learning
- verbal learning
- transfer
- variables affecting learning
- learning to learn
- chemistry of learning
- learning and education
- management and learning

7. Remembering and Forgetting
   - forgetting curve
   - measurement of forgetting
   - theories of forgetting
   - retroactive and proactive inhibition
   - variables affecting forgetting
   - memory
     - sensory memory
     - short-term memory
     - long-term memory
   - coding and retrieval
   - learning and memory
   - requirements for learning
   - mnemonics
   - chemistry of memory

8. Lanuage, Thinking and Problem Solving
   - language
     - importance of language
     - language, learning and thinking
     - structure of language
     - rules of language
     - acquisition of language
     - language, concepts and concept formation
     - psycholinguistics
   - thinking
     - thinking as a process
     - undirected and directed thinking

- problem solving
    - steps in problem solving
    - barriers to problem solving
- creativity
- personality
    - definition
    - study of personality
    - determinants of personality
    - personality development
    - individual differences
    - theories of personality
        - psychoanalytic
        - behavioristic-social learning
        - existential-humanistic
    - stability and change
    - personality and social behavior
    - assessment of personality
        - problems
        - methods
        - kinds of personality measures
    - research in personality
    - physiology and personality

10. Abnormal Behavior
    - normal-abnormal distinction
    - frustration
    - conflict
    - effects of frustration and conflict
    - defense mechanisms
    - behavior pathology
        - nature and scope of the problem
        - classification of disorders
            - organic versus functional disorders
            - neuroses
            - psychosomatic disorders
            - psychoses
            - psychopathic personality
        - etiology and theories
    - treatment
        - psychotherapies
        - psychoanalysis
        - general psychotherapy
        - existential-humanistic therapy
        - behavior therapy
        - group therapy
        - play therapy
    - physical-medical therapies
    - prevention and control

11. Measurement and Statistics
    - importance of measurement and statistics
    - problems in measurement
    - descriptive statistics
    - inferential statistics

12. Psychological Testing
    - purpose of testing
    - requirements of a test
    - reliability
    - validity
    - intelligence tests
        - what is intelligence?
        - intelligence tests
        - IQ
        - limitations of intelligence tests
        - nature of intelligence
        - intelligence, achievement and creativity
        - heredity-environment and intelligence
        - racial differences
        - individual differences
    - other kinds of tests

13. Developmental Psychology
    - conception
    - individual differences at birth
    - biological-physical-psychomotor development
    - maturation
    - preceptual development
    - development of language
    - intellectual development
    - personality development
    - social-emotional development
    - moral development
    - child rearing patterns
    - socialization
    - identification
    - play
    - sex typing
    - dependency
    - fear and anxiety
    - love and affection
    - anger and aggression
    - sexual behavior
    - peer influence
    - adolescence
    - adulthood
    - maturity
    - old age

14. Social Psychology
    - man in society
    - interpersonal relations
    - psychology and social problems
    - social class
    - attitudes
        - attitude change
        - theories of attitude change
    - group dynamics

sociometry
leadership
conformity and obedience
bystander apathy

15. Applied Psychology
    - industrial and personnel psychology
    - human engineering
    - vocational guidance

DEVELOPMENTAL PSYCHOLOGY

1. Introduction
    - definition and scope
    - practical importance of developmental psychology
    - origins and history
    - child psychology as a scientific discipline
    - role of theory
    - application of research
    - contemporary child psychology
    - methods and tools
    - issues in child psychology
    - concept of development
    - developmental psychology and society

2. Prenatal Development
    - heredity, chromosomes and genes
    - heredity transmission
    - heredity versus environment issue
    - results of human genetic research
    - congenital effects
    - conception
    - early development
    - environmental influences
    - birth process and its consequences

3. Infancy
    - neonate
    - basic life processes in the neonate
    - initial equipment
    - stages of infancy
    - physical growth in infancy
    - perceptual capacities
    - perceptual development
        - attention
        - depth perception
    - behavioral capacities
        - reflexes
        - maturation
        - locomotion
        - manipulation
    - developmental trends
    - acquired or learned responses
    - basic needs
    - vocalization
    - speech development
    - relation of vocalization to later mental development
    - intellectual development in infancy
    - individual differences among infants
    - learning
        - learning and development
        - nature of learning
        - types of learning
        - classical and operant conditioning
        - basic conditions of learning
        - basic conditioning and learning phenomena

- reinforcement
    - principle of reinforcement
    - basic reinforcement phenomena
    - primary and secondary rewards
- observational learning
- learning-performance distinction
- motivation
    - nature of motivation
    - sources of motivation
    - relation between motives and behavior
    - types of needs and motives
    - learned motives
    - environmental influences on motivation
- learning and motivation
- complex learning and learning theory
- anxiety
- social learning
    - social implications of the infant's behavior
    - attachment
    - consequences of attachment to caretaker
    - relation of attachment to anxiety
    - separation anxiety
    - basic trust
- lack of a primary caretaker
- child rearing patterns and effects
- infant's cultural heritage

4. Toddler
    - physical-psychomotor development
    - language development
        - stages in language learning
        - functions of language
        - theories of language acquisition
    - play
        - content
        - function
        - social dimension
    - socialization
        - nature of socialization
        - autonomy
        - toilet training
    - fear and anxiety

5. Preschool Years
    - physical-psychomotor development
    - perceptual development
    - language and cognitive development
    - Piaget's view of cognitive development
    - conditions affecting language and cognitive development
    - mastery and achievement motivation
    - self-concept and awareness of self
    - preschool education
        - rationale
        - school
        - effects of preschool
    - intelligence
        - nature of intelligence

- concept of IQ
    - intelligence tests
    - intellectual differences
    - heredity versus environment issue
    - factors influencing performance on intelligence tests
- sexual motives and curiosity
- aggression
- frustration
- modeling
- dependency
- fear and anxiety
- identification
- sex typing
- moral development
- family influences on personality
- peer interactions and influences
- maladjustment and psychotherapy
- behavior modification

6. Middle Years
    - physical growth
    - intellectual-cognitive growth
    - cognitive activities
    - Piaget's theory of intellectual development
    - social roles
    - sex typing and sex roles
    - peer relations, groups and culture
    - parent-child relationships
    - self-concept
    - social class differences
    - influence of siblings
    - conscience and moral standards
    - development of prejudice
    - problems of adjustment
    - expansion of social environment
    - adjustment to school
    - factors influencing behavior in school
    - school achievement
    - culturally disadvantaged child

7. Adolescence
    - physical changes in adolescence
    - adolescence as a cultural phenomenon
    - the adolescent and his parents
    - the adolescent and his peers
    - adolescent activities
    - social class differences
    - adjustment demands
    - dependence and independence
    - identity and self
    - adolescent sexuality
    - values
    - alienation
    - culturally deprived
    - juvenile delinquency
    - maturity

8. Adulthood
    - concept of maturity
    - transition from adolescence into adulthood

9. Disturbances in development

SOCIOLOGY

Two approaches of presenting sociology are given

I. Classical Method

1. Introduction
    - science and non-science
    - scientific method
    - sociology and the social sciences
    - pure and applied sociology

2. Human Behavior: Cause and Effect
    - biological factor
    - geographic factor
    - demographic factor

3. Culture and Socialization
    - ideas-norms-materials
    - culture concepts
    - ideologies and technology
    - theories of socialization
    - culture and language

4. Social Organization
    - introduction
    - norms
    - institutions
    - associations
    - groups
    - status and role
    - deviance
    - mass communication

5. Social Differentiation
    - family institution
    - economic and governmental institutions
    - educational and religious institutions
    - social stratification
    - social change

6. Man and His Cultures
    - selected cultures of man

II. Social Problem Oriented Approach

1. Vested Interest and Pressure Groups

2. Crime and Delinquency

3. Problem Families and Family Problems

4. Religious Problems and Conflicts

5. Population Problems
6. Educational Problems and Conflicts
7. Social Class: Poverty
8. Race Problem
9. Urban and Rural Problems
10. Communication Problems in Mass Activity
11. Personal Pathologies
12. Health and Medical Care
13. Civil Liberties and Subversion
14. War in the 20th Century

ASEPSIS

1. Terminology

2. Principles

3. The Infectious Process
    - infection - sources and modes
    - body defenses
    - immunity
    - susceptibility to infection
    - inflamation
    - destruction of bacteria

4. Procedures of Techniques of Asepsis
    - handwashing technique
    - sterile technique and principles of sterilization
    - isolation technique

ATTITUDES IN HEALTH

1. Listening
2. Patient Privacy
3. Understanding Patient as an Individual
4. Social Psychological Factors of Illness
5. Respect for Others
6. Cooperation With Workers
7. Friendly
8. Knowing Yourself
9. Caring for Self and Others
10. Courteous

EMERGENCY MEDICAL CARE

1. Definition and Discussion of Emergency
2. Topographic Anatomy
3. Important Diagnostic Signs and Their Interpretation
4. Airway Obstruction
5. Pulmonary Arrest: Artificial Ventilation
6. Cardiac Arrest: Cardiopulmonary Resuscitation
7. Shock
8. Bleeding and Control of Bleeding
9. Soft Tissue Injuries by Body Area
10. Fractures and Dislocations
11. General Principles of Splinting and Immobilization
12. Fractures and Dislocations
    - shoulder and upper extremity
    - spine
    - hip and lower extremity
13. Injuries and Emergent Conditions
    - skull and brain
    - eye
    - chest
    - abdomen
14. Fractures of the Pelvis and Injuries of the Genitilia
15. Emergencies Related to the Genito-Urinary System

INTERPERSONAL RELATIONSHIPS

1. Identify Self-Personality

2. Identify Principles of Human Behavior

3. Recognize and Accept Individuality

4. Empathy and Sympathy

5. More Advanced Topics
    - dealing with anxiety and hostility
    - dealing with depression
    - personality characteristics
    - group dynamics
    - interviewing techniques

NUTRITION

1. Introduction to Nutrition
   - food and its meanings
   - definitions
   - science of nutrition
   - dietary surveys in U.S.
   - international problems
   - international agencies

2. Objectives for Nutrition Study
   - record of food use
   - nutrition based on chemistry
   - nutrition and health
   - composition of the body
   - metabolism

3. Dietary Allowances
   - minimum daily requirements
   - food guides
   - composition of foods
   - purposes of dietary evaluations
   - comparison with R.D.A.
   - importance in nutrition

4. Proteins
   - fate of protein in the body
   - protein quality
   - daily protein needs
   - food sources of protein

5. Energy Foodstuffs
   - nature of energy
   - photosynthesis of energy
   - definition and composition
   - fats in the body
   - daily intake
   - food sources
   - daily dietary planning
   - concentrated sources of energy
   - role in nutrition
   - energy metabolism in the body

6. Fats
   - nature of fats
   - metabolism of fats
   - dietary allowances
   - food sources
   - cholesterol
   - caloric imbalances as health hazard

7. Minerals
    - occurrence in the body
    - acid-base balance
    - calcium
    - iron
    - iodine
    - other elements in nutrition
    - current problems

8. Vitamins
    - nature of vitamins
    - supplying needs for vitamins
    - regulatory functions
    - effects of deficiency
    - daily needs and sources

9. Food Sources
    - stability in foods
        - solubility
        - effect of heat, light, and oxidation
    - national food supply
    - milk group
    - meat group
    - vegetable-fruit group
    - bread-cereal group
    - fats and oils
    - sugars and sweets
    - food acceptance dependencies
        - hunger, senses, and emotions
        - psychological values
        - cultural environment
    - meaning of food related to culture, occupation, and holidays
    - physiological basis for acceptance

10. Changing Food Habits
    - meal planning
    - basic family diet
    - food expenditure
    - effecting food economy

11. Safe Food Supply
    - food-borne diseases
    - methods of preserving foods
    - food handling

12. Community Problems
    - community facilities
    - nutrition programs in action

13. Special Problems Related to Nutrition
    - therapeutic adoptation of diets
    - overweight and underweight
    - diets for fevers and infections
    - nutrition in surgical conditions
    - diet for gastrointestinal disturbances

diet for metabolic and nervous disorders
diet for cardiovascular and renal disorders
diets for miscellaneous disorders
ascorbic acid
B-complex vitamins
needs through life cycle

PHILOSOPHY OF PATIENT CARE

1. Personal considerations
   - appearance and grooming
   - health
   - understanding yourself
   - communications
   - etiquette
   - courtesy-formal and informal

2. Team Member
   - you and the patient
   - you and the individual
   - you and other health personnel
   - you and the hospital
   - you and other institutions

3. The Patient and His:
   - religion
   - race
   - view of death
   - view of life
   - visitors

4. Ethical Responsibilities
   - general information
   - code of ethics

5. Legal Responsibilities
   - licensing bodies
   - license or certificate
   - contracts
   - tarts
   - crimes
   - patient's chart or record

6. Professional Organizations
   - (specific discipline involved)
   - health and welfare organizations

7. Career Opportunities
   - evaluate yourself
   - types of positions
   - evaluate the positions
   - the interview
   - resignations
   - dismissal
   - economic security

PREVENTIVE MEDICINE

1. Introduction

2. Population Trends and Public Health

3. Statistics in Public Health and Medical Research

4. Epidemiology

5. Infection Hazards of the Environment
    - infections primarily of animals that are transmissible to man
    - infections primarily of man in which the infective agent has a requisite period of extra-human residence before transmission
    - infections directly transmissible from man to man in which the infective agent may persist in the environment
    - diseases caused by preformed microbial products without true infection of the diseased host

6. Control of Infectious Diseases Acquired from the External Environment
    - infections carried by water
    - infections transmitted by milk and other foods
    - animal reservoirs and arthropod vectors of infection

7. Man as an Infectious Hazard to Man
    - primarily enteric infections
    - primarily respiratory tract infections
    - venereal and other direct contact infections
    - infections that can be artificially transmitted by inoculation

8. Control of Infections Directly Transmissible from Man to Man
    - case detection, antimicrobial therapy, and chemoprophylaxis in the control of contagious diseases
    - specific artificial immunization and control of infectious diseases
    - role of artificial immunization in public health: specific vaccines for specific purposes

9. New Hazards to Man and New Problems of Environmental Sanitation
    - sanitation
    - air pollution
    - other chemical hazards of the environment: poisons, drugs, and food additives
    - human heredity and genetic determinants of diseases

10. Child Health Protection
    - dental health
    - school health services
    - conservation of vision

11. Accident Prevention

12. Conservation Medicine
    - protection and promotion of health in adult life
    - promotion of mental health
    - malnutrition and its prevention
    - preventive aspects of metabolic diseases
    - conservative aspects of arthritis, cancer, and cardiovascular disease
    - medical care and rehabilitation of the aged

TEAMWORK IN HEALTH CARE DELIVERY

1. Philosophy
    - concept of health
    - concept of illness
    - concept of continuum in health care delivery

2. Organization of Health Team
    - components or specialties
    - functions
    - problem solving via cooperative approach

3. Implementation
    - communication system
    - conferences
    - leadership

VOCATIONAL RELATIONSHIPS

1. Orientation to Health Field
    - career opportunities
    - adjustment to role of health worker
    - your interest in specific health career
    - orientation to specific discipline
    - responsibility to the discipline
    - development of the specific discipline

2. Ethical & Legal Aspects of Health Care
    - philosophy of individual worth
    - understanding others
    - position on health team
    - licensure
    - laws which regulate specific practice (professional)

3. Values
    - cultural differences
    - social institutions
    - obsolete and utilized
    - persons with special problems
    - individual vs. community values
    - communication and values

4. Health Care Delivery
    - continuity of care
    - understanding and using services of health workers
    - image of health worker

5. Health Care Delivery Systems
    - solo practice
    - team practice
    - group practice
    - official organization
    - non-official organization
    - federal programs and local health care delivery

6. Tools to Work With
    - community organization
    - geographic location
    - characteristics of people
    - major occupations
    - educational systems
    - mechanism for planning
    - vital statistics
    - multiple causation
    - environmental considerations
    - professional organizations

APPENDIX G

FIRST GENERAL CORE CURRICULUM DEVELOPMENTAL OBJECTIVES

HEALTH CORE CURRICULUM DEVELOPMENT PLAN

I. Introduction

A complete generalized and partial specific set of procedural guidelines regarding the development of core would be desirable. Such a plan would provide the Core Curriculum staff with a much needed organized plan of action, and would provide the health manpower council with the knowledge of where we are in core curriculum development. Without such a plan the possibility of making developmental errors is great, and the health manpower council will have a tendency towards uncertainty and frustration in their deliberations. Any developmental plan must be the logical result of considering both the goal and existing constraints on the final product. These considerations plus a generalized act of procedural guidelines and a partial set of specific actions are described below.

II. Goal

The goal or objective of the Core Curriculum Project is to design a single or multi-faceted core of educational material which will serve as many of the health educational programs in South Dakota as possible. Based upon this core it is further desired to provide opportunities for lateral and vertical program mobility for the students. Side issues include transferral of credits, credit for experience, challenge examination possibilities, standardized performance examinations, development of educational materials, and continuing education possibilities.

The development of the core and related activities is to be done in full consultation with the health manpower council which includes representatives from all interested health education programs in South Dakota.

III. Developmental Considerations

Several concerns must be kept in mind when developing a health core curriculum. These concerns emerge as professional or academic constraints on the trpe of core which is acceptable. There are three primary constraints which must be considered.

It is desired that the core accurately reflect the real needs of the individual health specialties with provision for orderly modification of core as specialty needs change or new specialty programs arise.

The core must be consistent with the available resources and operational regulations of the training institutions. At the same time reasonable modifications of institutional resources and regulations may need to be explored.

Accreditation requirements, liscensing laws, and interstate student and practioner mobility will also need to be considered relative to core.

Ultimately it will be necessary to optimize the core with respect to the above constraints.

IV. Generalized Developmental Procedural Guidelines

The procedural guidelines described below are based upon the project objectives together with the constraints affecting optimal attainment of the objectives.

(1) Each health specialty must determine those topics covering a wide curricular area which should be required at initial and final levels in its program. Identification of these topics should be made via input from both academic and clinical educators as well as both practitioners and current students. If possible a weighting formula, which may be specialty dependent, should be used in conjunction with the various input data. It should be emphasized that the desired output concerns those topics which should be taught as opposed to those topics which are currently being taught.

(2) Following the topical selection and identification phase, the depth and breath to which each topic should be pursued should be ascertained. It would be desirable to define as many of these topics as possible in terms of performance objectives.

(3) Once the identification and definition phases are completed, it should be determined to what extent these educational objectives, i.e. topics are consistent with the resources and regulations of the training institutions. It is anticipated that at this stage the educational objectives would be sudivided into "courses" and prerequisite or associative objectives would be identified by instructors responsible for teaching such courses. It is further assumed that this developmental phase would be accomplished in consultation with appropriate administrators and teachers from all training institutions participating in the core curriculum project.

(4) After the educational objectives have been identified, defined, classified, and expanded, one or more core alternatives should be outlined and tested against certification requirements, liscensing laws, and interstate student mobility needs. Furthermore, the core alternatives should be examined in terms of lateral and vertical student mobility, promise for growth and development, continuing education needs, and whatever other side issues are applicable.

(5) Finally, the fairly polished core must be submitted to the health manpower council for their recommendations and hopefully their approval. Assuming approval, the final stage would be submission to the health training institutions for their acceptance or rejection.

(6) After the core has been designed it will be necessary to begin coordination and development of credit transferral, challenge examination, career ladder, and continuing education procedures.

APPENDIX H

CORE CURRICULUM DEFINITIONS, RATIONALE AND OBJECTIVES

I. Operational Definition of Core

Core: Integrated Content

Training (Vocational/Technical) Core: Core derived from tasks, skills and knowledge directly related to employment in the health field

Education (Academic) Core: Core derived from academic disciplines

II. Rationale for Core

1. Enhancing teaching efficiency and economy by structuring a foundation of courses which can be applied to a wide spectrum of careers.
2. Providing uncommitted students with an educational experience which will assist in their choice of a career and will be applicable to that career.
3. Allowing the student to synthesize and correlate learning experiences.
4. Permitting greater program flexibility and adaptability.
5. Providing greater interaction among a variety of students.
6. Preventing unnecessary duplication of subject matters, supplies, equipment, space, faculty, etc. (economic use of time, money, and energy).
7. Simplifying administration within and between agencies.
8. Promoting an articulated sequence of courses.
9. Providing a basis for non-teacher biased challenge exams.
10. Providing standardized content.
11. Enhancing career mobility.

III. Objectives of Core

1. The student will have a solid foundation of knowledge and skills upon which to build occupational mobility in health.
2. The student will have a foundation of theoretical knowledge in order to continue an upward academic pursuit rather than having to start over.
3. The student will have a basic foundation for the future needs of the individual and a basic understanding of what it means to be a healthy person.

APPENDIX I

TOPICAL OUTLINES AND PERFORMANCE (MEASURABLE) OBJECTIVES FOR THE PRIMARY AND SECONDARY CORE CURRICULA

Training/Education Area: Primary Core Curriculum

Topical Outline	Measurable Objectives
I. Health Care Delivery System	The student will be able to:
A. Definition of Health 1. Levels of Wellness (Homeodynamics)	1. Explain the World Health Organization concept of health. 2. Relate in his own words his concept of health by demonstrating in writing his values about health.
B. Health Care Personnel 1. Vocational Opportunities 2. Health Care Team Concept	3. In a short paragraph, briefly explain the core curriculum-career ladder approach to health education. 4. Given a list of health occupations and their related job descriptions, identify by matching the various occupations with their job descriptions. 5. Given a list of health occupations, identify (define) by listing in order of increasing education and degree of responsibility the occupational level within each health care occupation. 6. Given a list of health care team members, describe briefly their role in relation to preventative, therapeutic, and rehabilitative health of an individual.
C. Organizational Structures of Health Care Facilities 1. Types of Facilities a. Hospitals b. Nursing Homes c. Clinics d. Others (Health Related Public or Private Agencies)	7. Given the following list of health care facilities, identify by writing a short statement of no more than 50 words the primary services of each: a. hospital b. nursing homes c. clinics d. medical centers e. a private health agency f. a public health agency
D. External Controls of Organizations and Individuals 1. Legal Aspects a. Responsibilities b. Protection c. Client/Patient Rights	8. Define the term "law", specifically as it applies to the health worker. 9. List the historical sources for the law and specifically "medical" law.

Topical Outline	Measurable Objectives
I. D. 1. (Continued)	10. Demonstrate your knowledge of the rights of the individual under the law and how these rights might be violated if consent and medical orders are inadequate.
	11. Indicate in given situations when an act can be interpreted as malpractice or negligence.
	12. Distinguish civil from criminal law.
	13. State the need for accurate and complete medical records.
	14. List several basic rules to follow for the prevention of litigation.
2. Ethical Aspects	15. Define ethics as applied to health care workers.
	16. Differentiate between legal aspects and ethical considerations.
	17. Discuss the necessity for and utilization of ethics in hospital situations.
	18. Apply ethical behavior guidelines in judging appropriate choices of action in eight hypothetical, health-related situations.
3. Accreditation, Certification and Licensure	19. Explain the reasons for licensure or certification of health workers.
4. Sources of Funds	20. List (or match) a short description of sources of funds which might be used to pay for health care services in the following situations: a. child with crippling disease such as C.P. b. aged individual with broken hip c. maternity and child care d. family maintaining health e. others

Topical Outline	Measurable Objectives
II. Introduction to Health Science A. Introduction to the Human Anatomical System 1. Anatomical Organization a. Cells, Tissues and Organization	21. Locate the cytoplasm, nucleus, cell membrane and mitochondria on a diagram of a cell.
	22. Define orally and/or in writing the terms mitosis and meiosis.
	23. Name at least two inorganic and three organic substances common to all protoplasm.
	24. Identify by name, six characteristics of protoplasm.
	25. Distinguish between intracellular and interstitial fluids.
	26. Using his own words, describe in writing the processes of: diffusion, filtration and osmosis.
	27. Define in writing the term tissue, and name four main tissue types.
	28. Define the term organ.
	29. List eight of ten organ systems.
	30. Name the two large body cavities.
	31. Name and define the directional terms used in anatomy.
	32. Name and define the planes of the body.
2. Integument (Skin and Mucous Membrane) a. Structure b. Function	33. Given an unlabeled diagram, the student will correctly identify by labeling the following: pigment granule epidermis dermis subcutaneous tissue root of hair sweat gland sebaceous gland
	34. Identify at least two functions of the skin.
	35. Describe at least two characteristics of mucous membrane; identifying by name three body areas where mucous membranes are found.

Topical Outline	Measurable Objectives
II. A. 3. Skeletal System a. Structure b. Function	36. List five major functions of skeletal system. 37. Name the two chemical elements most necessary for bone formation, and identify common sources of each. 38. Given an unlabeled diagram of a human skeleton, correctly locate the following: skull parietal sternum frontal clavicle occipital humerus temporal radius mastoid process ulna maxilla pelvis mandible femur sphenoid patella ethmoid tibia carpals fibula metacarpals scapula phalanges ribs greater trochanter vertebral tarsals column metatarsals 39. Be able to designate by name and anatomical region the several sections of the spinal column. 40. List three types of joints, and give an example of each by indicating the movement involved.
4. Muscular System a. Structure b. Function	41. List by name the three types of muscle. 42. Define the following terms: tendon belly of muscle origin insertion 43. Describe in writing four major functions of the muscular system. 44. Describe in writing how muscles produce mechanical movement. 45. Given a diagram, label the following muscles: deltoid biceps pectoralis external oblique triceps gastrocnemius hamstring sternoclidomastoid trapezius latissimus dorsi gluteus maximus gluteus media quadriceps femoris

Topical Outline	Measurable Objectives
II. A. 5. Nervous System a. Structure b. Function	46. Name two major subdivisions of the nervous system.
	47. Given an unlabeled diagram of a neuron, label correctly three main parts of the neuron.
	48. Define in writing, using your own words, the terms receptor, synapse, effector, reflex arc, dendrite, axon and myelin sheath.
	49. Given an unlabeled diagram of the central nervous system, correctly locate the following: meninges, cerebellum, cerebrum, medulla, spinal cord and spinal fluid.
	50. Using your own words, describe in writing a major function of the: meninges, cerebellum, cerebrum, medulla and spinal cord.
	51. Identify the general function of the autonomic nervous system.
	52. Identify the major function of cerebrospinal fluid.
6. Sensory System a. Structure b. Function	53. Given a diagram of the eye and its associated structures, label: conjunctiva choroid ciliary body lens aqueous humor pupil scelera retina iris cornea vitreous humor
	54. Given a diagram of the ear, identify by labeling the following structures: pinnae tympanic membrane incus eustachian tube semicircular canals external auditory meatus malleus stapes cochlea
7. Circulatory System a. Structure b. Function	55. Name the two major components of blood.
	56. Describe in writing the general function of the blood.
	57. Name three formed elements of human blood, and describe their functions.

Topical Outline	Measurable Objectives
II. A. 7. (Continued)	58. Given a diagram of the circulatory system, identify by labeling the following arteries: aorta pulmonary carotid subclavian brachial radial femoral coronary iliac
	59. Identify the average number of white cells and red cells per cubic millimeter usually considered normal for an adult.
	60. Differentiate between thrombus and embolus.
	61. Given a diagram of the circulatory system, identify by labeling the following veins: jugular subclavian superior vena cava inferior vena cava basilic cephalic median saphenous vein
	62. Given a diagram of the heart, trace the path of the blood.
	63. Given a diagram of the heart, label the following structures: right and left atria right and left ventricles mitral valve tricuspid valve
	64. Name the covering of the heart and the three layers of the heart.
	65. Name four common blood groups.
8. Respiratory System a. Structure b. Function	66. Using your own words, describe the mechanics of breathing.
	67. Given a diagram, identify by labeling the following structures: trachea pharynx bronchi lungs larynx epiglottis
	68. Describe the three functions of the nose in the breathing process.
	69. Describe the structures and functions of bronchioles, alveolar ducts and alveoli.

Topical Outline	Measurable Objectives
II. A. 8. (Continued)	70. Name the compound responsible for oxygen transport to the tissues.
	71. Define the terms vital capacity and normal respiratory rate.
9. Digestive System a. Structure b. Function	72. Name four types of teeth, and describe the function of each.
	73. Given a diagram of a tooth, correctly identify by labeling the following: enamel, dentin, pulp, crown, gingiva and cementum.
	74. Given a body chart, identify by labeling the following parts of the digestive system: tongue pharynx stomach cardiac sphincter jejunum ascending colon transverse colon rectum anus gall bladder sigmoid salivary glands esophagus pyloric sphincter duodenum ileum descending colon cecum appendix liver pancreas
	75. On an unlabeled diagram of the digestive tract, indicate those places where chemical digestion of the following food groups takes place: starches, proteins and fats.
	76. Briefly define the term parastalsis.
	77. Briefly describe the digestive function of each of the following: salivary gland pancreas small intestine gall bladder liver stomach large intestine tongue
10. Excretory System a. Structure b. Function	78. In your own words, define bodily excretion.
	79. Name four excretory organs and one product of each.
	80. On a diagram of the urinary system, identify by labeling the following: renal pelvix medulla bladder ureter capsule urethra

Topical Outline	Measurable Objectives
II. 10. (Continued)	81. On a diagram of the nephron unit identify: afferent arteriole efferent arteriole Bowman's capsule glomerulus proximal tubule loop of Henle distal tubule collecting tubule
	82. Describe briefly three functions of the kidney.
	83. Describe the functions of the ureter, bladder and urethra.
	84. Describe the characteristics of normal urine with regard to color, appearance and specific gravity.
11. Endocrine System a. Structure b. Function	85. Define the term endocrine, and explain how this system of glands differs from the exocrine glands.
	86. On a diagram, name and locate seven endocrine glands.
	87. Identify by name and state the function of one hormone produced by each of the following glands: pancreas ovary testes thyroid parathyroid adrenal adrenal cortex pituitary
12. Reproductive System a. Structure b. Function	88. Given a diagram of the male reproductive system, identify by labeling: testes epididymis prostate scrotum penis vas deferens seminal vesicle urethra urinary bladder ejaculatory duct
	89. Given a diagram of the female reproductive system and approximating structures, identify by labeling: ovary uterus fallopian tubes vagina cervix urethra bladder symphysis pubis vulva urinary meatus anus
	90. Name the primary functions of the ovaries, fallopian tubes, uterus, cervix and vagina.

Topical Outline	Measurable Objectives
II. A. 12. (Continued)	91. Name the primary functions of the epididymis, seminal vesicles, testes, vas deferens, ejaculatory duct, prostate gland, urethra, penis, and scrotum.
	92. Trace the path of the sperm cell through the male reproductive system.
	93. Trace the path of the egg cell through the female reproductive system.
	94. Given a diagram, identify the approximate site where fertilization normally occurs.
	95. Describe the menstrual cycle as it applies to reproduction.
B. Introduction to Microorganisms	96. Define the term "microbiology".
1. Types of Microorganisms a. Bacteria b. Fungi c. Virus d. Other e. Pathogenic versus Non-Pathogenic	97. State whether the majority of microorganisms are beneficial or detrimental to man. 98. Define the terms pathogen and non-pathogen. 99. State two ways in which microorganisms perform functions beneficial to man.
	100. In a short paragraph, summarize the development of the science of microbiology including important individuals and their contributions.
	101. List five broad categories of microorganisms.
	102. With prepared slides and a microscope or projector, identify the three basic types of bacteria.
	103. Define and name two diseases caused by each of the following: bacteria, fungi, protozoa, viruses and rickettsiae.
	104. Describe briefly the life requirements of bacteria.
2. Infection a. Sources 1. Food, Water and Air 2. Contact (Direct and Indirect) b. Susceptibility (Factors)	105. Define the term infection. 106. Describe the typical course of an infectious disease. 107. State how food, water and air can be sources of infection.

Topical Outline	Measurable Objectives
II. B. 2. (Continued)	108. State the difference between infection by direct and indirect contact, and name five diseases transmitted by each.
	109. Describe the role of five factors which affect one's susceptibility to disease.
3. Control of Microorganisms a. Asepsis	110. Define the terms asepsis, sepsis and antisepsis.
1. Definition a. Medical-Surgical b. Antisepsis c. Sepsis	111. Discuss asepsis, and state three situations where asepsis is especially important.
b. Isolation of Infection Sources 1. Client/Patient	112. Describe four ways that disease is transmitted from one person to another.
2. Visitors 3. Health Care Personnel	113. List at least four ways for breaking the chain of infection at the portal of entrance.
	114. List at least four ways for breaking the chain of infection at the portal of exit.
	115. Briefly describe how the chain of infection is affected by normal body defenses and antibiotics.
c. Sterile Techniques 1. Avoiding Contamination	116. Define the term sterile field, and identify common sources of contamination to it.
2. Disinfection 3. Sterile Field	117. Contrast the difference between sterilization and disinfection.
	118. In a simulated or actual clinical setting, practice the appropriate levels of aseptic technique appropriate to each given area.
4. Immunity	119. Define the term immunity.
a. Natural b. Acquired	120. Discuss the following types of immunity: immunity at birth immunity acquired by exposure to disease immunity acquired by having had a disease immunity acquired by artificial means (immunization)
	121. Differentiate between active and passive immunity.
	122. Define antibodies, and state their functions.

Topical Outline	Measurable Objectives
II. C. Introduction to Interpersonal Relationships	
1. Basic Social, Religious, Economic and Cultural Needs	123. List and discuss the basic needs of human beings.
2. Aspects of Personality a. Maturity b. Self-Awareness	124. Discuss at least five characteristics of maturity.
c. Stress and Anxiety d. Mental Health	125. Define the term stress.
3. Interpersonal Interactions	126. List three physiological causes of stress.
a. Relationship of Health Worker to Others	127. List five emotional causes of stress.
1. Client/Patient 2. Family 3. Other Health Workers	128. List five emotional causes of stress in the hospitalized client/patient. (Some acceptable causes are: strange surroundings, lack of privacy, depersonalization, altered daily routine, isolation from family, fear of unknown, fear of disability, fear for job security, loss of income and medical expenses.)
	129. Given a practical situation, recognize stress in self or others, and suggest means to relieve it.
	130. Discuss the meaning of the terms normality, neurosis and psychosis.
b. Empathy and Sympathy	131. Discuss the defense of one's own rights with firmness, but without hostility.
	132. Differentiate between sympathy and empathy.
4. Communications a. Written b. Verbal c. Non-Verbal	133. Speak clearly in a well-modulated voice, to the instructor's (or examiner's) satisfaction.
d. Observing, Reporting and Interviewing e. Medical Terminology and Abbreviations	134. Given a list of instructions, listen carefully and be able to repeat back the essential content.
	135. Shown a human interaction, record the behavior that communicates a non-verbal message, and interpret the non-verbal message.
	136. Convey by tone of voice and facial expression an attitude of cordiality and interest, to the instructor's satisfaction.
	137. In a job interview simulation, respond to questions easily, clearly and briefly while conveying essential information.

Topical Outline	Measurable Objectives
II. C. 4. (Continued)	138. In a role playing situation, given a series of client's/patient's comments and complaints, record the pertinent information he is attempting to communicate.
	139. Define and spell correctly at least 85% of the Medical Terminology and Abbreviation List. (Prefixes, suffixes, and abbreviations commonly used in the health field, called the Medical Terminology and Abbreviation List, will be provided to the instructor.)
D. Preventive Aspects of Health Care 1. Psychological, Social and Spiritual	140. Briefly relate the importance of psychological, social, cultural and spiritual factors on the health of a person.
	141. Using the following list, select at least one situation and show the interrelationship of the psychological, social, cultural and spiritual factors on the health of a person. parent child conflict job dissatisfaction marital discord religious conflict home environment financial difficulties self-image student pressures
2. Physical a. Personal Hygiene	142. In a brief paragraph or in a role playing situation, demonstrate to the instructor's satisfaction the importance of proper dental care, proper hair care, proper skin care and cleanliness of clothing to personal health, personal appearance and effect upon others.
	143. List the five links of the tooth decay chain.
	144. Define bacterial plaque.
	145. Identify the least number of times per day it is necessary to disturb bacterial colonization to prevent tooth decay.
	146. Identify two areas on the tooth where bacterial plaque most frequently accumulates.
	147. Briefly describe the process of peridontal disease.

Topical Outline	Measurable Objectives
II. D. 2. (Continued)	148. Identify four criteria for a proper toothbrush according to ADA specifications.
	149. Given a disclosing tablet, toothbrush and dental floss, demonstrate the complete removal of plaque from teeth.
	150. Identify five snack foods that do not contain fermentable carbohydrates.
	151. Compare the relationship of exposure of fermentable carbohydrates and amount of carbohydrate to dental decay.
	152. Briefly explain the interrelationship of each of the following to dental health: regular dental exams frequency of plaque removal plaque removal by a) tooth brushing, b) flossing fluorides diet
b. Body Mechanics 1. Personal	153. Position your body in alignment and balance, and state the reason for the position of your feet, knees, buttocks, abdomen, thorax and head according to the standards of good posture.
	154. Demonstrate accurately the body movements of flexion, extension, hyperextension, adduction and abduction and describe the movements using terms given in class.
	155. Given an activity to perform at floor level (e.g. mopping up a spill or placing slippers on a client's/patient's feet) the student will stoop keeping the body aligned and balanced using the large muscles of the thighs and buttocks for the activity.
	156. Given an object weighing ten to twenty pounds, demonstrate how to lift in such a manner as to minimize fatique and prevent straining.
	157. Given an object to push or pull (e.g. wheelchair, laundry cart or food cart) move the object by setting your muscles, using the leg muscles to supply most of the force needed, and using the body weight to assist in the movement.

Topical Outline	Measurable Objectives
II. D. 2. b. 1. (Continued)	158. Given an activity that requires turning or pivoting (e.g. assisting a client/patient from bed to chair or turning from desk to filing cabinet) position the feet and body in such a manner that straining your back or trunk will be prevented.
2. Client/Patient	159. Demonstrate how to properly position a client/patient in each of the following situations: eating in bed resting in bed sitting in a chair or wheelchair transferring from stretcher to bed transferring from bed to wheelchair assisting in walking assisting into automobile turning in bed
c. Handwashing	160. Demonstrate the correct technique for washing the hands as a means of maintaining standards of cleanliness that will minimize the risk of contracting or transmitting infections.
	161. Indicate the routes by which bacteria can be transmitted, state the conditions that are favorable and unfavorable to their growth, and suggest appropriate handwashing precautions against bacterial contamination.
	162. State at least five circumstances that necessitate washing the hands, as a result of direct or indirect contact with contaminated materials.
	163. Explain and demonstrate correct handwashing technique to others.
3. Proper Nutrition and Dietary Considerations	164. Define what is meant by proper nutrition.
	165. Identify four food groups, and state the recommended daily serving of each.
	166. Name five of the six types of nutrients, and briefly explain the function of each.
	167. List four causes of obesity.
	168. Briefly discuss some effects of obesity upon health or body systems functions.

Topical Outline	Measurable Objectives
II. D. 3. (Continued)	169. Identify two major health problems in the United States which are the result of improper nutrition.
4. Accident Prevention and Public Safety	170. Briefly describe the significance of the Occupational Safety and Health Act (OSHA) to institutional safety.
a. In the Home	171. Name five common types of accidents in the home, and describe the necessary precautions to prevent each.
	172. Name five types of accidents in health care facilities, and describe the necessary precautions to prevent each.
b. Institutional Safety 1. Radiation	173. List three sources of radiation danger in the hospital.
2. Handling and Storage of Chemicals and Drugs	174. Name three potentially hazardous chemicals, and discuss necessary precautions in handling and storage.
3. Gas Cylinders	175. Briefly describe the dangers associated with the handling and storage of oxygen and other pressurized gases.
4. Fire Extinguishers	176. Name the common types of fire extinguishers, and demonstrate their use.
5. Drugs, Use and Misuse	177. Write the five "rights" of drug administration.
	178. Explain why administration of drugs to patients must always be recorded.
	179. Write the dangers of self-medicating with a drug prescribed for another person.
6. Rehabilitation Concepts a. Social b. Physical c. Psychological	180. Given a list of conditions requiring rehabilitation, explain why it is necessary to consider the social, psychological, cultural and physical factors involved in rehabilitation. (list - coronary, stroke (cerebrovascular accident), alcoholism, blindness, impaired motion (arms, legs), mental illness, etc.)

Topical Outline	Measurable Objectives
II. D. 7. Basic Health Care Tasks	
a. Measurements 1. Metric System 2. Temperature Scales 3. Measuring Devices	181. Given a list of measurements in the English system and with the aid of references, convert the following measurements to the metric system. lbs. to Kg. oz. to cc pts. to cc inches to cm.
	182. Name the measurement devices commonly employed in the health care industry, and state an advantage of each.
	183. Name the basic metric system units of length, mass and volume.
	184. Given the decimal equivalents of the metric prefixes kilo, milli, deci and micro.
b. Checking Client/ Patient I.D.	185. List at least five situations which require positive identification of the client/patient.
	186. State why the identification band is the safest method for positively identifying the client/patient in a hospital.
c. Vital Signs - Observations 1. Temperature	187. Given an oral thermometer, take and record body temperature with a precision of ± 0.1° F.
2. Pulse	188. Take and record a radial pulse with a precision of ± 4 beats.
3. Respiration	189. Take and record respiration rate.
4. Blood Pressure	190. Given a sphygmomanometer, determine another's blood pressure with a precision of ± 4mm of Hg
d. Charting	191. Name two items of information that must appear on every page of a client's/patient's chart.
	192. List at least five categories of information which are entered into the client's/patient's chart.
	193. Discuss orally or in writing the confidentiality and the ethical considerations involving the client's/patient's chart.
	194. Explain why certain health workers are not allowed to read the client's/patient's chart.

Topical Outline	Measurable Objectives
II. D. 7. e. Handling, Storage and Disposal of Chemicals, Specimens and Other Materials 1. Collecting Specimens 2. Aesthetics 3. Safety Considerations 4. Contamination, Decomposition, etc. of Materials 5. Disposal Procedures	195. Given a list of situations, list the precautions necessary in collecting and handling at least one of the following: urine specimen stool specimen sputum specimen bacterial culture 196. Describe the procedures for decontamination of linens, instruments and dishes contaminated with infectious organisms. 197. Describe the procedures for discarding of disposable items from hospitals and clinics. 198. Discuss briefly the ecological consequences of disposal, e.g. dressings, plastics, syringes, glass, chemicals, etc.

Topical Outline	Measurable Objectives
III. Emergency Medical Care A. Definition and Discussion of Emergency	199. Define the term "emergency" in one sentence.
	200. From a list of symptoms and signs of emergency, indicate those that are life threatening and might require immediate care. bleeding · breathing difficulties unconsciousness · shock pain · bruises skinned knee · minor burn contusion · choking vomiting · diarrhea
1. Recognizing Personal Limitations	201. Answer each of the following questions: a. Who may legally initiate most emergency procedures? b. Who may decide that an emergency situation does not exist, and therefore dismiss the client/patient? c. Who should accept a client's/patient's complaint at face value and care for the injury or illness? d. Who should assume that a highly emotional and demonstrative client/patient has a serious injury or illness? e. Who should assume that a stoic and undemonstrative client/patient does not have a serious injury or illness? f. When should attention to religious customs or needs be given? g. When may a conscious client/patient in an emergency situation be legally forced to receive medical treatment against his will?
B. Diagnostic Signs 1. Pulse (Types, Ranges, Deviations)	202. Define the term "pulse" in one sentence.
	203. List and locate on a body chart three places where the pulse can be most easily felt.
	204. State the range of pulse rate for the healthy adult and child.
	205. Describe the common causes of the following variations in pulse rate and volume: rapid, weak pulse rapid, pounding pulse absence of a pulse
	206. Explain why the carotid pulse is the most reliable one to check in emergency situations.
	207. Take the carotid pulse.

Topical Outline	Measurable Objectives
III. B. 2. Blood Pressure	208. Define the term "blood pressure" in one sentence.
	209. Define the term "systolic pressure" in one sentence.
	210. Define the term "diastolic pressure" in one sentence.
	211. State the ranges of systolic pressure and diastolic pressure in healthy adults.
	212. State the significance of lowered blood pressure. (Insufficient pressure in the arterial system to pump blood to all the organs of the body.)
	213. State the common causes of shock.
3. Temperature	214. State the temperature for a healthy person in degrees Fahrenheit and degrees Celsius.
	215. Describe how the skin acts as a temperature regulator.
4. Skin Appearance	216. State what causes skin color, and describe the skin color of a healthy Caucasian, Black, Oriental and Indian.
	217. State alternate methods to determine pallor, cyanosis, erythemia and jaundice in Blacks, Caucasians, Orientals and Indians, and describe what each of the conditions means in terms of medical importance.
5. Pupil Reaction	218. Describe the appearance of the pupils of a healthy (uninjured) person.
	219. Describe the reaction of these same pupils to light. (Students should test reaction in class.)
	220. List common causes of the following changes or variations in one or both pupils: constricted pupil (ordinary light) dilated pupil (ordinary light) unequal pupil size failure of pupils to react to light

Topical Outline	Measurable Objectives
III. B. 6. Speech Deviation	221. Describe changes in speech which might indicate that the patient is in need of emergency care.
7. Motor Ability	222. Define paralysis in one sentence.
	223. State the possible causes of impaired motion to the following body parts: a. one side of the body b. arms and legs c. legs, but not the arms d. any single extremity
8. Bleeding a. Capillary	224. Define bleeding (hemorrhage) in one sentence.
b. Venous c. Arterial	225. Define external bleeding in one sentence.
d. Signs of Internal Bleeding	226. Discuss types of bleeding, their signs and significance: a. capillaries b. veins c. artery
	227. List the three common methods to control external bleeding.
	228. Arrange the three methods of controlling bleeding in order of first, second and third choice, giving rationale for the selected arrangement.
	229. Using a universal dressing or gauze pad, demonstrate the technique of controlling external bleeding of the extremities.
	230. Describe how to apply a tourniquet emphasizing the following points: a. when to use a tourniquet b. dangers of indiscriminate use c. importance of using a wide tourniquet d. importance of marking patient
	231. Given a human subject or body chart, locate the following pressure points at the following arteries: a. carotid b. brachial c. temporal d. femoral e. radial f. facial
9. Conscious State	232. Describe the conscious state of a healthy person in terms of alertness, orientation, and response to vocal or physical stimuli.

Topical Outline	**Measurable Objectives**
III. B. 9. (Continued)	233. As an example, compare and contrast changes in the state of consciousness between an intoxicated client/patient, a client/patient with a head injury, and a client/patient in a diabetic coma.
10. Psychological State	234. Given a list of conditions, **underline** those that may cause a client/patient to be emotionally disturbed or agitated.
	235. State the limited conditions under which a non-law enforcement officer may restrain or transport a client/patient against his will.
11. Respiration	236. Define respiration in one sentence.
	237. State the normal ranges of respiratory rate (breaths per minute) of the healthy adult and child.
	238. Recognize and list common causes of the following deviations from normal respiration: a. rapid, shallow respirations b. deep, gasping labored breathing c. little or no abdominal/chest movement d. little airflow at the mouth and nose e. frothy blood at the nose with coughing
C. Types of Injuries and Applied Emergency Care 1. Shock a. Types b. Symptoms c. Emergency Care	239. Define shock (state of collapse of the cardiovascular system).
	240. Given the list of common types of shock, give the signs and symptoms for each. a. hemorrhagic shock (blood loss) b. respiratory shock (unable to breathe sufficient amount of oxygen) c. psychogenic shock (temporary blood loss from brain) d. cardiogenic shock (inadequate heart function) e. septic shock (toxins from bacteria in the blood) f. anaphylactic shock (serious allergic reaction)
	241. Contrast anaphylactic shock symptoms with other types of shock.
	242. Rank the following techniques of treatment for shock in order, beginning with the most critical first: a. control bleeding b. splint fractures c. secure and maintain a clear airway d. keep patient warm e. record vital signs

Topical Outline	Measurable Objectives
III. C. 1. (Continued)	243. Outline the specific action for each type of shock (See #240 above).
	244. Assist in bringing patient (or simulated client/patient) out of shock by demonstrating the above principles. (See "Emergency Management of the Patient in Shock," by Robert M. Hardiaway, M.D., M.C., U.S.A., William Beaumont Army Medical Center, El Paso, Texas)
2. Airway Obstruction a. Symptoms b. Emergency Care	245. List the important signs of adequate breathing.
	246. List the important signs of impaired breathing.
	247. Given a simulated situation restore adequate breathing by: a. positioning the head and jaw properly b. removing foreign material from nose and throat
3. Bleeding a. Methods of Control 1. Direct Pressure 2. Pressure Points 3. Tourniquets	(The methods of control of external bleeding were covered in Section III. B. 8., Measurable Objectives #225-#231, so only methods of control of internal bleeding will be covered here.)
	248. Distinguish between the types of internal bleeding that can and the types that cannot be controlled.
	249. Describe the general treatment for internal bleeding.
4. Soft Tissue Injuries a. Unexposed 1. Contusions (Brain, Trunk and Extremities) 2. Sprains 3. Strains b. Exposed 1. Abrasions 2. Lacerations 3. Incisions 4. Punctures 5. Burns 6. Contusions 7. Bites a. Venomous b. Non-Venomous	250. Distinguish between closed and open soft tissue wounds by defining each in one sentence and by giving examples of each.
	251. Describe the proper order of treatment for managing open wounds (in general).
	252. Describe the acceptable treatment for managing a venomous bite.

Topical Outline	Measurable Objectives
III. C. 5. Cardio-Pulmonary Arrest a. Recognition of Arrest b. Types of Arrest (e.g. Electrical, Drowning, etc.) c. A,B,C's of Resuscitation d. Definitions of Clinical and Biological Death	253. Name the two signs of cardiopulmonary arrest (absence of breathing or absence of pulse and/or heart sounds).
	254. List other signs that should alert one that cardiopulmonary arrest has occurred or is imminent (loss of consciousness, absence of blood pressure, dilated pupils, extreme pallor of skin, absence of bleeding from wounds).
	255. Name the common causes of cardiopulmonary arrest.
	256. Define clinical death.
	257. Define biological death.
	258. Discuss the significance of each type of death as it applies to treating a patient in cardiopulmonary arrest.
	259. Name the A, B, C's of resuscitation, and state the functions of the A, B, Cs.
	260. Using a model (e.g. Resusci-Anne), initiate CPR (See "Cardiopulmonary Resuscitation Manual for House Staff Physicians," The New Physician, March, 1966, Pages 36-50).
6. Poisoning	261. Define the term poison in one sentence.
	262. Give examples of the following types of poisons: a. surface poisons b. ingested poisons c. inhaled poisons d. injected poisons
7. Fractures a. Classes 1. Simple 2. Compound	263. Define the term fracture in one sentence.
	264. Differentiate between the two types of fractures: (a) closed (simple); (b) open (compound) and explain why the latter is more dangerous.

Topical Outline	Measurable Objectives
III. C. 7. b. Types 1. Spiral 2. Green-Stick 3. Comminuted 4. Depression 5. Longitudinal 6. Impacted 7. Oblique	265. Given sketches or pictures of each, identify each of the following classifications of fractures: a. green-stick b. oblique c. comminuted d. depressed e. transverse f. spiral g. impacted
c. Emergency Care of Fractures 1. Communication with Client/ Patient 2. Observation 3. Handling - Immobilization, Transport 4. Asepsis 8. Dislocations a. Symptoms b. Emergency Care	266. Define the term dislocation in a single sentence. 267. Describe how each of the following signs or symptoms may indicate a fracture, dislocation or both: a. deformity b. tenderness and/or pain c. loss of movement or use d. grating (crepitus) e. swelling and discoloration (ecchymosis) f. exposed fragments
	268. Given a particular situation, place in chronological order the following steps in the discovery and emergency care for a suspected fracture or dislocation a. have client/patient attempt to move the extremity b. immobilize c. examine for hidden injuries d. ask the client/patient if there is pain e. observe for deformity f. carefully feel over each of the extremities (or spine) or press lightly
	269. State the principal objective of emergency splinting.
	270. Given the necessary materials, perform the following on a simulated client/patient: treat and rigid splint an open fracture of the humerus or other bone.
	271. Demonstrate methods of lifting and transporting clients/patients with fractures or dislocations.

Topical Outline	Measurable Objectives
III. C. 9. Head Injuries a. Symptoms b. Emergency Care	272. List the signs of a skull fracture.
	273. List the signs and symptoms of brain damage.
	274. Describe emergency care for a skull fracture.
	275. Describe initial emergency care for clients/patients with brain damage.
10. Spinal Injuries a. Symptoms b. Emergency Care	276. List the signs and symptoms of spinal injuries.
	277. Describe the splinting of an injured spine.
	278. Given a long backboard or special stretcher, lift and transport a simulated client/patient with a spinal injury (two students).
11. Convulsions	279. Define the term convulsion in one sentence.
	280. State the most important precaution to be taken to protect a client/patient in convulsion.
12. Chest and Abdominal Injuries a. Symptoms b. Emergency Care	281. Cite the important signs of chest injury.
	282. List the steps in the emergency care of a chest injury (critical ones first).
	283. State signs and symptoms of abdominal injuries.
	284. List the steps in the emergency care of an abdominal injury.
13. Burns a. Types b. Emergency Care	285. List the four major types of burns (according to cause).
	286. Name and describe the three degrees of burns.
	287. Discuss the appropriate emergency care of each of the following types, locations and extents of burns: a. heat burns, minor b. heat burns, moderate/severe c. chemical burns d. electrical burns

Topical Outline	Measurable Objectives
III. C. 14. Drug Emergencies a. Reactions b. Overdoes Emergencies	288. List the client's/patient's physical and psychological reactions caused by stimulant drugs (uppers) and depressants (downers). 289. State the principal emergency care procedure for a client/patient suffering from drug overdose.

Training/Education Area: Anatomy and Physiology

Topical Outline	Measurable Objectives
A. Cell Structure	The student will be able to:
1. Nucleus 2. Membrane 3. Cytoplasm a. Organelles	1. Name and list a function for each of the following cellular organelles: mitochondria, endoplasmic reticulum, golgi bodies, ribosomes, lysosomes, nucleolus and nucleus.
B. Cell Function 1. Mitosis	2. Explain mitosis as a phenomenon of growth in somatic tissue by stating the chromosome number of resulting cells.
2. Meiosis	3. Explain meiosis as a process of sexual reproduction on germinal tissue by stating the chromosome number of the resulting cell type.
3. DNA and RNA Replication	4. Describe the locations of DNA and RNA in the cell.
4. Protein Synthesis	5. Briefly review the types of chemical bonds in the formation of proteins from amino acids.
5. Glycolysis	6. Relate the process of glycolysis from glucose breakdown to lactic and/or pyruvic acid.
6. Kreb's Cycle	7. Relate the Kreb's cycle from pyruvic acid breakdown to the production of energy, carbon dioxide and water.
7. Diffusion and Osmosis 8. Active Transport	8. Define the terms diffusion, osmosis and active transport, and give a specific example of each of these processes in cells of living organisms.
	9. Describe the effect of hypotonic and hypertonic solutions upon normal cells such as red blood corpuscles.
C. Levels of Organization 1. Types of Cells	10. Identify by sketching the following types of cells: a. three types of muscle cells b. bone cell c. cartilage cell d. neuron

Topical Outline	Measurable Objectives
C. 2. Tissues a. Intercellular Material b. Types of Tissues	11. List two functions of each of the following four types of tissues: epithetial, connective, muscle and nervous.
3. Organs	12. Define an organ in one sentence, and list the tissues comprising one specific organ.
D. Systems 1. Integument a. Epidermis b. Dermis c. Glands	13. Identify by sketching a cross section of the integument, labeling the following diagnostic features: dermis, epidermis, hair follicle, sebaceous gland and sweat glands.
2. Skeletal a. Axial and Appendicular Names b. Diagnostic Features and Location	14. Given a human skeleton, point out and name three of the diagnostic features of each of the long bones of the appendicular skeleton.
	15. Describe the structure of long, short, irregular and flat bones with reference to compact bone, spongy bone and location of marrow.
	16. Given a human skeleton, list types of vertebra, listing the number and a characteristic of each type of vertebra.
	17. Given a human skeleton, list the bones of the pectoral and pelvic girdles.
	18. Given a human skeleton or a sketch, name and locate all of the major bones of the skull and face.
	19. Given a human skeleton or a sketch, locate and list two major diagnostic features of each of the bones of the skull and the sinus cavities.
c. Formation of Bone	20. Describe the formation of bone as it occurs in long and flat bones of the body in 50 words or less.
d. Growth of Bone	21. Describe the growth of a long bone as it occurs in the epiphyseal plate in 50 words or less.
e. Histological Structure and Function 1. Bone 2. Cartilage 3. Ligaments	22. Compare cartilage and bone by listing two features of each relative to structure, blood supply and growth.

Topical Outline	Measurable Objectives
D. 2. f. Joints 1. Types 2. Movements	23. Given descriptive names of joints, give an example of each (ball and socket, hinge, etc.).
3. Muscular a. Histological Structure 1. Function	24. Name three major types of muscle tissue and state a function of each.
2. Physiology of Innervation and Contraction	25. Sketch a myoneural junction labeling a nerve ending, the source of the transmitter substance and effector cell membrane.
	26. Name two proteins found in myofibrils, and state the function of each.
b. Locations and Names of Major Muscles 1. Skeletal a. Origin b. Insertion c. Action 2. Smooth 3. Cardiac	27. Given the origin and insertions of five of the specific muscles in the list below, interpret and state the action involved with each, or Given the action of five of the specific muscles in the list below, give the point of origin and insertion for each. List of Specific Muscles: sternocleidomastoid, trapezius, latissimus dorsi, pectoralis major, serratus anterior, deltoid, biceps brachii, triceps brachii, brachialis, brachioradialis, gluteus maximus, gluteus minimus, gluteus medius, tensor fasciae latae, rectus femoris, vastus lateralis, vastus medialis, vastus intermedius, gracilis, adductor group, hamstrings, tibialis anterior, gastrocnemius, soleus, and levator ani.
4. Nervous a. Neuroglia and Neurons 1. Structure	28. Sketch a neuron and label the nucleus, dendrites, axons, cell body, myelin, neurolemma and nodes of Ranvier.
2. Transmission of Impulse	29. Briefly describe the all-or-none principle.
	30. Explain a nerve impulse in terms of membrane permeability as affected by sodium ion and potassium ion concentration changes in 50 words or less.
b. Central Nervous System	31. Sketch and label a lateral view of the brain in which the three main parts are located, and sketch and label the spinal cord noting the four main segment groups.

Topical Outline	Measurable Objectives
D. 4. b. (Continued)	32. State a major function for each of the three main parts of the brain using no more than one sentence for each.
	33. Name four lobes of the cerebrum, and state a function of each.
	34. Number and name the twelve cranial nerves, and state a function of each.
	35. Name the area of formation of cerebrospinal fluid.
	36. Describe the location and functions of cerebrospinal fluid in the central nervous system.
	37. Name the three meninges, and state the function of each.
	38. Briefly contrast the arrangement of gray and white matter in the brain and spinal cord, and state the significance of this.
	39. Briefly contrast the descending pyramidal and extrapyramidal tracts, and state a function of each.
	40. Briefly state the function of the ascending spinal tracts, and relate an example.
c. Peripheral 1. Reflex Arc 2. Synapse	41. Sketch a cross section of spinal cord, and draw a simple reflex arc.
d. Autonomic	42. Given a cross section drawing of the spinal cord, draw and label an autonomic reflex arc.
	43. Name the two divisions of the autonomic nervous system, and state some functions of each.
5. Sense Organs a. Eye	44. List the parts comprising the gross anatomy of the eye and accessory structures, and state a function of each part.
	45. Briefly describe the process by which light is converted to electrical nerve impulses in the retina.
	46. Briefly describe eye movements and the extrinsic muscles involved.

Topical Outline	Measurable Objectives
D. 5. b. Ear	47. List the three parts comprising the gross anatomy of the ear, the basic structures within each part, and state the function of each structure.
	48. Briefly describe how the Organ of Corti converts sound vibrations to nerve impulses.
c. Chemo-Mechano Receptors	49. Name and locate the receptors for the senses of smell, touch, pressure, pain, taste and equilibrium.
6. Circulatory a. Heart	50. Given a sketch of the heart, label the great vessels, chambers and valves, and indicate by the use of arrows the direction of blood flow from the vena cava to the aorta.
	51. Contrast the functions of the right and left sides of the heart, i.e. the volume pump versus the pressure pump.
	52. List and state the function of each of the three layers of the heart wall.
	53. List the four structures involved in the conduction of an impulse through the heart.
	54. Relate the cardiac cycle to the fluctuations on an EKG.
b. Vessels 1. Arteries 2. Veins 3. Capillaries 4. Lymphs, Ducts and Nodes	55. Differentiate among arteries, veins and capillaries by indicating the structure and stating the functions of each.
	56. Relate two ways that oxygen and three ways that carbon dioxide are carried in the blood stream.
	57. Locate the lymphatic system on a sketch of the human body, and state three of its functions.
c. Accessory Organs 1. Spleen 2. Thymus	58. Locate and state the major functions of the spleen and thymus.
d. Circulatory Systems 1. Pulmonary 2. Systemic	59. List the four main factors which would affect blood pressure systemically.

Topical Outline	Measurable Objectives
D. 6. d. 3. Portal	60. Describe the portal system by routing the flow of a glucose molecule from the gastrointestinal tract through at least eight vessels until it reaches the biceps muscle of the right arm.
4. Fetal	61. Trace the fetal circulation by noting the four structures peculiar to the fetal circulatory system.
5. Coronary	62. Briefly explain how the heart is nourished by reviewing the circulatory route with special emphasis upon the coronary arteries.
6. Lymphatic	63. Describe the route of tissue fluid as it returns to the circulatory system.
e. Controls 1. Nervous	64. Briefly contrast the effect of sympathetic and parasympathetic nervous system on smooth muscle contraction.
2. Hormonal	65. Briefly describe the effect of epinephrine and acetylcholine upon cardiac muscle contraction.
f. Blood 1. Hemopoitic Tissue 2. Formed Elements 3. Plasma	66. Describe the blood as a tissue, listing all of the main types of cells, the structure where each is formed and state a function of each cell type.
4. Transport Functions	67. State three major functions of plasma.
5. Clotting Mechanism	68. Describe the mechanism of clotting by listing four steps and by citing three or four factors that artificially or normally inhibit or hasten the clotting process.
6. Blood Groups	69. Cite the four ABO blood types, and briefly describe the process for crossmatching blood.
7. Respiratory a. Structure	70. Briefly explain the relationship of erythroblastosis fetalis to the Rh factor.
1. Airways	71. List five parts of the air conducting portion of the respiratory system, and identify one distinguishing feature of each part.
	72. State at least three functions which are common to all parts of the conducting portion of the respiratory system.

Topical Outline	Measurable Objectives
D. 7. a. 2. Lung Tissue	73. Identify the blood supply to the lung from the aorta.
	74. Name three parts of the respiratory portion of the lung, and state the functions of each part.
	75. Name the two layers of the pleura.
	76. Briefly distinguish between intrapleural and intrapulmonary pressures by noting the pressure changes with respiratory movements.
	77. Contrast inspiration and expiration as to the active process versus the passive process, and name two muscles involved when each one is active.
	78. Contrast upper and lower airways by listing two types of tissue composition changes for each airway.
	79. Briefly describe the function of surfactant with regard to respiratory distress syndrome.
b. Control of Respiration 1. Central Control	80. Name and locate three areas of central respiratory control.
2. Peripheral Control	81. Name two main types of peripheral respiratory controls, and relate two examples of each.
c. Mechanism of Breathing	82. Briefly describe the movement of the ribs and the diaphram in the process of breathing.
d. Gas Exchange 1. External Respiration 2. Internal Respiration	83. List four factors that affect the diffusion of oxygen and carbon dioxide at the alveoli.
	84. Describe the effects of carbon dioxide and body temperature upon oxygen uptake and release.
	85. Define anoxia, and relate two examples of it.
8. Gastrointestinal a. Digestive Organs and Secretions	86. Locate the extent of the pharynx and at least five major openings into this area.
	87. Name the coats of the intestinal wall, and cite at least two modifications found within the digestive tract.

Topical Outline	Measurable Objectives
D. 8. a. (Continued)	88. List in sequence from the mouth to the anus the seven major organs of the digestive tract citing at least one structural feature and one function of each organ.
b. Enzymes 1. Sources	89. Express the normal pH, to the nearest whole number, as found in the mouth, in the stomach and in the duodenum, and name the enzymes secreted in each area.
	90. Name three pancreatic enzymes, and identify the type of food which each of the three pancreatic enzymes will digest.
2. Functions	91. Demonstrate an understanding of the chemical phase of digestion by listing the end products of fat, carbohydrate and protein hydrolysis, and cite enzymes involved in the splitting of each of the three substances.
c. Accessory Organs 1. Liver and Gall Bladder	92. Given a torso diagram, sketch in the liver and the gall bladder, and two components of the common duct.
	93. Describe in one sentence the relationship of the liver to the gall bladder, and state four functions of the liver and two functions of the gall bladder.
2. Pancreas 3. Teeth and Tongue	94. Locate and describe the pancreas, citing two functions of this organ.
d. Absorption and Transport	95. List the organs of absorption, and state the type of material which is absorbed in each organ.
	96. Trace both routes of the absorption of food from the small intestine to the general circulatory system.
e. Excretion	97. List the end products of digestion which arrive in the colon for excretion, and cite the source of the fecal color.
9. Urinary a. Structure	98. Locate the kidney in the human body.
	99. Given a sketch of the longitudinal section of the kidney, identify and label at least five of the following: renal pelvis, calices, renal papillae, cortex, medulla, renal pyramids and renal columns.
	100. Sketch a nephron, labeling its five main parts and related vascular structures.

Topical Outline	Measurable Objectives
D. 9. a. (Continued)	101. Sketch and label the ureters, bladder and urethra, and state one function of each.
b. Function 1. Filtration	102. Relate three factors which would influence filtration at the glomerulus.
2. Secretion	103. Describe two functions of the tubules, and briefly explain the role of active transport in the tubule.
3. Controls	104. Name two hormonal controls on urine production, and identify the target tissue upon which each hormonal control acts.
c. End Products	105. Describe the five following characteristics of normal urine: color, pH, S.G., quantity and the major constituents.
10. Endocrine a. Structure and Location of Glands	106. Name and locate five endocrine glands.
	107. In two sentences differentiate between exocrine and endocrine glands, and describe the feedback mechanism.
b. Hormones 1. Types	108. Explain the function of the trophic hormones, and cite three examples of trophic hormones.
2. Functions and Interrelationships	109. List three hormones which affect the concentration of blood glucose, and name the endocrine gland which secretes each of the hormones.
	110. Write the name and a physiological effect of each major hormone secreted by the following endocrine glands: a. thyroid b. parathyroid c. pancreas d. anterior pituitary e. posterior pituitary f. adrenal cortex g. adrenal medulla h. testes i. intestinal mucosa (gastrin)
11. Reproductive a. Female Reproductive Organs 1. Structure 2. Function	111. List the glands, ducts and structures of the female reproductive system, and state a function of each major organ.

Topical Outline	Measurable Objectives
D. 11. a. 3. Hormones	112. Relate hormonal control to the typical ovarian cycle by sketching a graph of the cycle and indicating points of hormonal control upon the graph.
b. Male Reproductive Organs	
1. Structure	113. List the glands, ducts and structures of the male reproductive system, and state a function of each major organ.
2. Function	114. List at least three accessory male reproductive glands, and cite the function and location of each.
	115. Identify the composition of the seminal fluid, trace the course of passage from the body and cite the conditions necessary for fertility.
3. Hormones	116. Name the hormone released by the testes, and describe their functions relative to the male sex characteristics.
c. Reproductive Mechanism	
1. Gametogenesis	117. Name and describe at least four stages of oogenesis and spermatogenesis, contrasting the major differences between the two processes.
2. Fertilization	118 Locate the site at which fertilization usually occurs, and describe the process of fertilization.
3. Embryonic Development	119. Describe in one brief paragraph the exchange of nutrients and wastes as carried out by the placenta.
d. Birth Control	120. Explain how birth control drugs alter the normal pattern of hormonal control and causes other effects in the body, and list other methods of birth control together with the advantages and disadvantages of each.
F. Homeodynamics: Examples of System Integration 1. Regulatory Mechanisms	
a. Electrolyte Balance	121. Define electrolyte balance.
	122. Relate three effects of electrolyte unbalance.
b. Acid/Base Balance	123. Describe metabolic and respiratory acidosis and alkalosis.
	124. Name the three buffer systems in the body.
	125. State three factors which could alter acid/base balance.

Topical Outline	Measurable Objectives
F. 1. b. (Continued)	126. In comparison with normal values, contrast the values of pH, pCO_2 and HCO_3^- concentration in blood plasma during conditions of acidosis and of alkalosis.
c. Body Temperature	127. State five factors which will cause an increase in body temperature.
2. Adaptation of Stress	128. List three physiological responses of the body in meeting stress.
	129. List three pathological conditions which are due to stress.
G. Metabolism	130. Define the term metabolism, and differentiate between anabolism and catabolism.
	131. Define basal metabolic rate.
	132. List five factors that would influence normal basal metabolic rate.
	133. Name the three main food sources of energy, and indicate which one is the best source of energy.
	134. List five water-soluble and four fat-soluble vitamins.

Training/Education Area: Chemistry

Topical Outline	Measurable Objectives
A. Measurements 1. Metric System 2. Temperature Scales 3. Volumetric 4. Gravimetric 5. Significant Figures	The student will be able to: 1. List the metric units and their abbreviations that are commonly used in measurements of mass, volume and length. 2. Given the prefixes of micro-, milli-, centi-, deci- and kilo-, write the values of the prefixes as fractions or decimals. 3. Make conversions between metric units of length. 4. Make conversions between metric units of mass. 5. Make conversions between metic units of volume. 6. Make the following conversions: pounds to kilograms and vice versa ounces to grams and vice versa inches to centimeters and vice versa fluid ounces to milliliters or cubic centimeters and vice versa degrees Fahrenheit to degrees Celsius (Centigrade) and vice versa 7. Given the mass and volume of a substance, calculate the density (or specific gravity) of the substance. 8. Define the following terms: temperature, potential energy, kinetic energy, calorie and large calorie. 9. Demonstrate the ability to make volume measurements with the graduated cylinder, pipet and buret, to the stated precision of the apparatus. 10. Demonstrate the ability to use a chemical laboratory balance and a single-pan analytical balance to determine the weight of an object to the nearest 0.01 g and 0.001 g, respectively.

Topical Outline	Measurable Objectives
B. Atoms 1. Structure 2. Symbols 3. Electronic Configuration	11. Define the following terms: atom, nucleus, orbital, proton, neutron, electron, isotope, atomic number and atomic mass. 12. Given the number of electrons, protons and neutrons for an atom, draw a simple diagram showing the relative positions of these particles within the atom. 13. Given the name of an element in the list of elements below, write the symbol of that element, and vice versa. List of elements: hydrogen, helium, lithium, beryllium, boron, carbon, nitrogen, oxygen, fluorine, neon, sodium, magnesium, aluminum, phosphorus, sulfur, chlorine, argon, potassium, calcium, strontium, zinc, cobalt, arsenic, bromine, iodine, mercury, lead, silver, gold, tin, radium, uranium, manganese and copper. 14. Write the electronic configuration ($1s^2$, $2s^2$, $2p^6$, etc.....) for the first twenty elements. 15. Write Lewis symbols for the representative elements. 16. Sketch the orbital shapes of the s and p orbitals. 17. Given a list of electrons or protons and neutrons present in a variety of unidentified atoms, group together those atoms which are isotopes of the same element. 18. Given the atomic number and atomic mass of an isotope, calculate the number of protons or electrons, and neutrons. 19. Given the number of neutrons and the number of protons or electrons of an isotope, calculate the atomic number and the atomic mass.
C. Periodicity 1. Chemical Families 2. Properties of Elements 3. Valences	20. Define the following terms: period, group, family, row, representative elements, transition elements, metal, non-metal, metalloid, ion, ionization energy, atomic radius, ionic radius, ionic charge, oxidation state, rare gas and rare gas configuration.

Topical Outline	Measurable Objectives
C. 1.-3. (Continued)	21. Given a periodic chart, predict and explain group and period trends in electronegativity, atomic radius, ionic radius, valence and ionization energy.
	22. Given the group number of a representative element, state the group name and the ionic charge or oxidation number obtained by the gain or loss of electrons necessary to attain the electronic configuration of the nearest rare gas.
	23. List the common oxidation states (suggested ones are in parenthesis) for the following elements whose oxidation states are not readily determinable from the group number: iron (2+, 3+), cobalt (2+, 3+), nickel (2+), copper (1+, 2+), silver (1+), tin (2+, 4+), mercury (1+, 2+) and lead (2+, 4+).
D. Compounds 1. Formulas 2. Naming of Compounds	24. Write the formulas and names of binary compounds formed from the elements listed in measurable objective #13.
	25. List the names, formulas and ionic charges of the following complex ions: nitrate, nitrite, sulfate, sulfite, carbonate, bicarbonate, phosphate, monohydrogen phosphate, dihydrogen phosphate, perchlorate, chlorate, chlorite, hypochlorite, chromate, dichromate, permanganate, acetate, hydroxide, cyanide and ammonium.
	26. Given an anion and a cation, by name or by symbol or formula, derived from the list of elements or the list of complex ions in measurable objectives #13 and #25, respectively, write the formula and name of the compound which would be formed by a combination of the two ions.
	27. Given the names of two elements and a periodic chart, predict whether a covalent or ionic bond will form between the elements.
E. Stoichiometry 1. Atomic Weights 2. Molecular Weights 3. Mole Concept	28. Distinguish among atomic number, mass number and atomic weight.
	29. Define the following terms: mole, molecular weight, gram-molecular weight, and Avogadro's number.

Topical Outline	Measurable Objectives
E. 1.-3. (Continued)	30. Given a molecular formula, calculate the molecular weight to the nearest 0.1 amu. (A periodic chart or table of atomic weights may be used). 31. Given the number of atoms or molecules of a substance, determine the number of gram-molecular weights (moles) of the substance. 32. Given the weight of a substance and its formula, calculate the number of moles. 33. Given the number of moles of a substance and its formula, calculate the weight of the substance.
F. Molecular Structure and Bonding 1. Electrovalent 2. Covalent 3. Metallic 4. Molecular Orbitals	34. Define and differentiate among the following types of bonds or bonding: ionic, covalent, coordinate-covalent, hydrogen, Van der Waals forces, metallic, sigma and pi. 35. Given an atom of each of two representative elements, predict whether an ionic or covalent bond will form (use of periodic chart is allowed). 36. Given the formula of a compound or complex ion, determine the oxidation number of each element present. 37. Draw the Lewis structures for such binary, covalent compounds as water, ammonia, methane, carbon tetrachloride, hydrogen chloride and carbon dioxide. 38. Given the structure of a covalent compound, indicate those bonds which are polar. 39. Draw the Lewis structures and molecular orbital descriptions for ethane and ethene (ethylene). 40. From the following compounds select all pairs which will form hydrogen bonds with one another: water, methane, hydrogen fluoride, carbon tetrachloride, ammonia and carbon dioxide.

Topical Outline	Measurable Objectives
G. Chemical Equations 1. Balancing 2. Stoichiometric Calculations	41. Given the formula of a compound, calculate the percentage by weight of each element present.
	42. Given the percentage by weight of each element present in a compound, calculate the empirical formula.
	43. Given the empirical formula and the molecular weight, calculate the molecular formula.
	44. Given an unbalanced equation, balance the equation. (The chemical equations will be those which can be balanced by inspection only.)
	45. Given the number of moles of a reactant or product in a balanced chemical equation, calculate the number of moles of any other reactant or product.
	46. Given the number of moles or weight of one reactant or product in a balanced chemical equation, calculate the number of moles or weight of any other reactant or product present in the equation.
	47. Given the weight of each reactant and product in a given balanced, chemical reaction, determine the limiting reagents and the amounts of other reagents in excess, if any.
H. Chemical Reactions 1. Types of Chemical Reactions	48. Given examples of chemical reactions, classify them as one of the following types of reactions: synthesis, replacement, decomposition and redox.
I. Acids, Bases and Salts 1. Structure 2. Properties 3. Reactions 4. pH and Buffers	49. Given the name or formula of an acid or base from the list below, give the formula or name, respectively. Acids: HCl, $HClO$, $HClO_2$, $HClO_3$, $HClO_4$, H_2S, H_2SO_3, H_2SO_4, HNO_2, HNO_3, H_3PO_4, CH_3COOH, H_2CO_3, H_3BO_4 Bases: $NaOH$, KOH, $Ca(OH)_2$, $Mg(OH)_2$, NH_3, NH_4OH, $al(OH)_3$
	50. Define the following terms: neutral, neutralization, pH, acidic, basic, strong acid, weak acid, strong base, weak base, buffer, dilute and concentrated.

Topical Outline	Measurable Objectives
I. 1.-4. (Continued)	51. Identify each of the acids and bases listed in measurable objective #49 as being weak or strong with an accuracy of 80%.
	52. Write a balanced reaction in which the reactants are one acid and one base taken from the list of acids and bases given in measurable objective #49.
	53. Given an acid or base from the list in measurable objective #49, write the equation for its ionization or dissociation in water.
	54. Define acids and bases in terms of the Arrhenius Theory and in terms of the Brønsted Theory.
	55. Given a balanced equation representing the reaction of a substance with water, identify the substance as an Arrhenius acid or base.
	56. Given a balanced equation representing an acid-base reaction, correctly identify each of the reactants as a Brønsted acid or a Brønsted base.
J. States of Matter 1. Gases 2. Liquids 3. Solids 4. Applications to Health Science	57. State the basic concepts of the Kinetic Molecular Theory and, on the basis of this theory contrast the physical properties of gases, liquids and solids.
	58. State and explain in terms of the Kinetic Molecular Theory, each of the following: Boyle's Law, Charles' Law and Dalton's Law of Partial Pressures.
	59. Given the percentage molar composition of the atmosphere or any mixture of gases at a stated pressure and percentage molar composition, calculate the partial pressure of each component.
	60. Given a temperature in degrees Celsius (centigrade), calculate the temperature in degrees Kelvin (absolute).
	61. Using Charles' Law or Boyle's Law and given values for three of the four variables, calculate the value of the remaining variable.
	62. Using the ideal gas law ($PV=nRT$), and given values of three of the four variables, calculate the value of the remaining variable.

Topical Outline	Measurable Objectives
J. 1.-4. (Continued)	63. Given the partial pressures of carbon dioxide or oxygen in the atmosphere and in the blood, describe the exchange of gases between the atmosphere and blood in terms of partial pressure differences. 64. Briefly discuss the application of gas laws to an Intermittent Positive Pressure Breathing Apparatus (IPPB).
K. Solutions 1. Concentration Units 2. Electrolytic and Non-Electrolytic Solutions 3. Effects of Solution Concentration upon Cells 4. Osmosis 5. Dialysis	65. Define the following terms: solvent, solution, solubility, electrolyte, non-electrolyte, strong electrolyte, weak electrolyte, concentrated, dilute, saturated, unsaturated, supersaturated, percent by weight, percent by volume, weight/volume percent (mg %, g%), molarity (M), normality (N), ppm, osmosis, diffusion, dialysis, osmotic pressure, osmotic concentration, physiological concentration (isotonic, hypotonic, hypertonic) and colloidal dispersion. 66. Describe the effects of temperature, pressure, surface area, nature of solvent and nature of solute on the solubility of a given substance. 67. Define the terms strong electrolyte, weak electrolyte and non-electrolyte, and give one example of each. 68. Discuss the effect of solubility upon conductivity. 69. Given the name and/or formula of a compound, the concentration and the volume desired, calculate the weight of solute needed and describe the procedure used to prepare the solution. 70. Given the concentration of two solutions separated by an osmotic membrane, determine which solution has the greater osmotic pressure and the direction of osmosis. 71. Given the osmotic concentration of a solution, predict whether cells will undergo hemolysis or crenation when placed in the solution. 72. Discuss the phenomena of dialysis as applied to hemodialysis units.

Topical Outline	Measurable Objectives
L. Chemical Kinetics (Non-Mathematical)	73. Define the term chemical kinetics.
1. Factors Affecting Rates	74. Explain the effects of the following changes on the rate of a chemical reaction: concentration, temperature, pressure, particle size, nature of the reactants (ionic vs. covalent), and the presence or absence of a catalyst.
M. Chemical Equilibrium (Non-Mathematical) 1. State of Equilibrium 2. Factors Affecting Equilibrium	75. Define the following terms: dynamic equilibrium, chemical equilibrium (molecular and ionic), Le Chatelier Principle, pH, buffer solution and hydrolysis.
3. Acid/Base Equilibria	76. Given a balanced chemical equation including the enthalpy (heat) value, determine the effects of the following on the equilibrium of the reaction represented by the equation: change of concentration of one of the components, a change in temperature, a change of pressure and the addition of a catalyst.
	77. Write the balanced equation representing the ionization (autoprotolysis) of water.
	78. Write balanced equations for the ionization of common weak acids, weak bases and electrolytes.
	79. Given the value of K_w for water (1×10^{-14}), and the hydrogen ion concentration in a solution, calculate the hydroxide ion concentration.
	80. Given the value of K_w for water and the hydroxide ion concentration in a solution, calculate the hydrogen ion concentration.
	81. Given the hydrogen ion concentration in a solution, calculate the pH of the solution.
	82. Given the pH of a solution, calculate the hydrogen ion concentration in that solution.
	83. Given the hydroxide ion concentration of a solution, calculate the pH of that solution.
	84. Given the pH of a solution, calculate the hydroxide ion concentration in that solution.
	85. Given a pH value, state whether the solution is acidic, basic or neutral.

Topical Outline	Measurable Objectives
M. 1.-3. (Continued)	86. Given a list of pH values, arrange them in order from the most acidic to the most basic.
	87. State the effect of adding the salt of a weak acid to a solution of that acid or of adding the salt of a weak base to a solution of that base in terms of the Le Chatelier Principle.
	88. Write the Henderson-Hasselbalch equation for a buffer system.
	89. Given the pK_a value of a buffer system and the concentrations of the buffer components, calculate the pH of the solution.
	90. Given the carbonate/bicarbonate system of the blood, show by means of chemical equations how the system operates to maintain control of the hydrogen ion concentration, the hydroxide ion concentration and the pH of the blood.
	91. Given the name or formula of a common salt, and predict whether it will be acidic, basic or neutral in water solution.
	92. Define alkalosis and acidosis in terms of the pH of the blood, specifically in reference to the normal pH range.
N. Nuclear Chemistry 1. Radioisotopes 2. Applications to Nuclear Medicine 3. Applications to Radiation Therapy	93. Define the following terms: radioactivity, radioisotope, alpha particle, beta particle, gamma ray and half-life.
	94. Given a nuclear reaction with one atomic symbol or particle missing, supply the missing item.
	95. Given the mass of a radioisotope and the half-life, calculate the quantity of the isotope remaining after 1,2,3, and 4 half-lives.
	96. Discuss applications of radioisotopes to diagnostic medicine.
	97. Discuss applications of radioisotopes to radiation therapy.
	98. Discuss the health hazards of radiation.

Topical Outline	Measurable Objectives
O. Carbon Chemistry	
1. Nomenclature and Structures of the Functional Groups	99. Given the name, draw the structural formulas; or given the structural formulas, give the names of the first ten members of the straight chain alkane series.
	100. Given a structural formula for any alkane not exceeding ten carbons, give the IUPAC name.
	101. Given the structural formula for any alkene not exceeding ten carbons, give the IUPAC name.
	102. Draw the structural features of the following organic functional groups: primary alcohol, secondary alcohol, tertiary alcohol, phenol, primary amine, secondary amine, tertiary amine, thioalcohol (mercaptan), ether, thioether, disulfide, alkyl ammonium salts, aldehyde, ketone, hemiacetal, hemiketal, acetal, ketal, carboxylic acid, carboxylate salt, ester, primary amide, secondary amide and tertiary amide.
	103. Given the name of any functional group listed in the above measurable objective, give the formula; or given the formula, give the name.
	104. Given a structural formula containing up to ten carbon atoms and one or more of the functional groups listed below, name the compound using the IUPAC convention. Functional groups: alcohol, mercaptan, ether, aldehyde, ketone, carboxylic acid, ester, amine and amide.
	105. Given a structural formula of an acid or aldehyde containing from one to five carbon atoms, provide the common name of the compound, i.e. formic acid, acetic acid, ..., valeric acid and formaldehyde, acetaldehyde, ..., valeraldehyde.
	106. Given the IUPAC name of a compound as described in the above measurable objective, write the structural formula.
	107. Contrast the bonding in ethane, ethylene and acetylene using molecular orbital descriptions.

Topical Outline	Measurable Objectives
O. 1. (Continued)	108. Given the structural formulas, give the names; or given the name, give the structural formula of the following representative aromatics: benzene, toluene and naphthalene.
	109. Given the structural formula, give the name; or given the name, give the structural formula for the following representative hetrocyclic nitrogen compounds: pyridine, purine, pyrimidine, furan and pyran.
	110. Define the following terms: geometrical isomerism and optical isomerism, and give two examples of each.
2. Physical Properties	
3. Simple Reactions a. alcohols and mercaptans b. ethers c. aldehydes and ketones d. carboxylic acids and esters e. amines and amides	111. Contrast the chemical reactivity of ethane and ethene (ethylene).
	112. Given the reactants (either by name or by structure), write the structure of the organic product(s) and name the functional groups produced in the following types of reactions: hydrogenation of a double bond or triple bond hydration of a double bond dehydration of an alcohol (inter- or intramolecularly) oxidation of primary alcohol oxidation of secondary alcohol oxidation of mercaptans reaction of alcohols with inorganic acids (esterification) reduction of disulfides reduction of aldehydes reduction of ketones oxidation of aldehydes reaction of aldehydes with alcohols reaction of ketones with alcohols reaction of hemiacetals with alcohols reaction of hemiketals with alcohols reduction of carboxylic acids hydrolysis of acetals hydrolysis of ketals reaction of carboxylic acids with alcohols reaction of carboxylic acids with amines hydrolysis of esters hydrolysis of amides saponification of esters reaction of amines with mineral acids reaction of carboxylic acids with bases
4. Applications to Health Science	

Topical Outline	Measurable Objectives
P. Biochemical Compounds 1. Carbohydrates	113. Define the following terms: carbohydrate monosaccharide, disaccharide, trisaccharide, oligosaccharide, polysaccharide, aldose, ketose, triose, tetrose, pentose, hexose, heptose, hemiacetal, kemiketal, acetal and ketal.
	114. Explain the significance of the "D" in the names of the common sugars.
	115. Draw the Fisher open-chain projection structures of D-ribose, 2-deoxy-D-ribose, D-glucose, D-fructose and D-galactose.
	116. Draw the Haworth structures illustrating the difference between alpha and beta forms of D-glucose and of D-galactose.
	117. Explain the difference between a reducing and a non-reducing sugar.
	118. Define the classes of compounds known as glycosides, and the types of bonding known as a glycoside bond.
	119. Draw structures to illustrate the differences among alpha-1,4; beta-1,4; alpha-1,6 glycoside bonds.
	120. List the hydrolysis products of maltose, isomaltose, lactose, sucrose, cellobiose, cellulose, starch, amylose, dextrin, omylopectin and glycogen. (Note: Isomaltose is important in the chemistry of dental plaque.)
	121. Compare the structures and origins of the polysaccharides: starch, cellulose, glycogen, dextran and levan. (Dextran and levan are also important in the chemistry of dental plaque.)
2. Lipids	122. Define the following terms: fatty acid, simple lipid, simple ester, glyceryl ester, phosphate ester, fat and oil.
	123. List the common classes of lipids, and give one source and one physiological function for each class.
	124. Draw structures of representative mono-, di- and triglyceride.

Topical Outline	Measurable Objectives
P. 2. (Continued)	125. Given a glyceride (mono-, di-, or tri-), write the products of an acid or enzymatic hydrolysis.
	126. Given a glyceride (mono-, di-, or tri-), write the products of complete hydrolysis by sodium hydroxide (saponification).
	127. Explain the difference between each of the following pairs: saturated and unsaturated fat saponifiable and non-saponifiable lipid triglyceride and phospholipid
	128. Compare, using appropriate illustrations, the structures of soaps and detergents, and explain how they act as emulsifying agents.
3. Amino Acids and Proteins	129. Define the following terms: α-amino acids, peptide (amide) bond, dipeptide, polypeptide, simple protein, conjugated protein, isoelectric pH, basic amino acid and acidic amino acid.
	130. Define the term essential amino acid, and describe the basic physiological difference between the essential and non-essential amino acids.
	131. Draw the structures of an amino acid and a dipeptide in the classical and the zwitterionic forms.
	132. Given an amino acid and its isoelectric pH, discuss the effect of changing the pH of the medium on the structure of the amino acid.
	133. Describe the bonding and intra-molecular forces responsible for: the primary structure of proteins the secondary and tertiary structures of proteins
	134. Describe the process of protein denaturation, reversibly and irreversibly, in terms of changes in the primary, secondary and tertiary structures.
	135. Prepare a block diagram of the nitrogen cycle in nature.

Topical Outline	Measurable Objectives
P. 3. (Continued)	136. List four classifications of conjugated proteins, and give one example of the physiological importance of each.
4. Nucleic Acids	137. Distinguish among nucleic acids, nucleotides and nucleosides.
	138. List the products formed upon complete hydrolysis of RNA and of DNA.
	139. Explain what is meant by and the significance of base pairing, double helix and genetic code.
	140. Outline the major steps or sequence of events in protein biosynthesis, indicating the roles of DNA and ribosomal RNA, messenger RNA and transfer RNA.
Q. Enzymes and Regulators	141. Define and/or distinguish among these terms: enzyme, apoenzyme, holoenzyme, coenzyme, metal ion activator, vitamin, provitamin, hormone, prostaglandin, proenzyme, zymogen and substrate.
1. General Characteristics 2. Specificity	142. Explain what is meant by the "Lock and Key" theory of enzyme action.
3. Kinetics and Mechanisms	143. Describe the effects of temperature, pH, substrate concentration and enzyme concentration upon the kinetics of enzyme catalysis.
	144. Explain the difference between reversible and non-reversible inhibition.
a. Enzyme Catalysis b. Enzyme Inhibition	145. Given the Lock and Key theory, explain what is meant by: active site, binding site, catalytic site, group specificity, absolute specificity and inhibition.
4. Vitamins, Hormones, Prostaglandins and Co-Factors	146. Explain and give examples of how an enzyme assay may be used as a "chemical biopsy" for diagnosis of state of health.
	147. Compare the Lock and Key theory to the mechanism of antigen-antibody reactions.
	(NOTE: Objectives #148-#163 could also be taught in a nutrition course.)
	148. Contrast the physiological functions of vitamins, hormones and prostaglandins.

Topical Outline	Measurable Objectives
Q. 5. Pathological Indicators (LDH, SGOT, DGPT)	
R. Chemistry of Digestion 1. Enzymes	149. Describe the process of salivary digestion including the functions of mucin, salivary amylase, bicarbonate acid, phosphate ion and bacteria of the mouth.
	150. Describe the process of gastric digestion.
	151. Describe the process of intestinal digestion including the functions of bile, intestinal fluid and pancreatic fluid.
2. Absorption	152. Describe the process of absorption of the end products of protein, carbohydrate and lipid digestion, indicating the form in which each is absorbed.
S. Metabolism 1. Bioenergetics	153. By means of a block diagram, describe how energy released by metabolism (catabolism) of carbohydrates and lipids is stored in ATP, and how it is released to drive energy requiring reactions (endothermic reactions).
	154. Define the following terms: metabolism, anabolism and catabolism.
2. Carbohydrates	155. Define and distinguish among the terms: gluconeogenesis, glycogenesis and glycogenolysis.
	156. By means of a block diagram, show the interrelationships between glycolysis, the citric acid cycle, the respiratory chain, the Cori cycle and the hexose monophosphate shunt.
	157. Define each of the following terms: hypoglycemia, hyperglycemia, renal threshold, hypoinsulinism and diabetes mellitus.
	158. Describe and compare the role of insulin, glucogen and epinephrine in the chemical maintenance of proper blood glucose level.
3. Lipids	159. Define the terms lipogenesis and lipogenolysis.
	160. By means of a diagram, show the major steps in the metabolic interconversion of fatty acids and acetyl coenzyme A.

Topical Outline	Measurable Objectives
S. 3. (Continued)	161. Define and give one example for each of the following: ketosis, ketonuria and lactic acid acidosis.
4. Proteins	162. Define the following terms: nitrogen cycle, nitrogen balances and ornithine cycle.
	163. Define and give examples of oxidative deamination and transamination.
5. Hormonal Control	164. By means of diagrams, show the interrelations of carbohydrate, lipid and protein metabolism, indicating the importance of acetal coenzyme A.
T. Body Fluids 1. Chemical Composition of Blood	165. List the major chemical constituents of human blood.
2. Urine a. Normal Composition	166. List the major chemical constituents of normal urine.
b. Pathological Constituents	167. List the major pathological constituents of urine.
c. Diuresis	168. Describe the physical processes taking place in diuresis.
d. Urine Analysis	169. List and describe the common tests used to determine the presence or absence of the common pathological constituents of urine.
3. Other Fluids 4. Fluid Balance a. Metabolic b. Solution Therapy c. Effect of Respiratory Rate d. Gas Exchange e. Hypovalemic Shock	170. By means of diagrams and appropriate chemical equations, illustrate gas exchange (O_2 and CO_2) at the lung interface and the tissue interface.
	171. State the pH range for normal blood, and describe the buffer systems that help to maintain this level.
	172. Describe the process of exchange of water and solute in tissues including use of the terms osmotic pressure, blood pressure and solute concentration.
	173. Distinguish between the following pairs of conditions: respiratory and metabolic alkalosis; respiratory and metabolic acidosis. Give an example of body chemistries (for example, hyperventilation) which are responsible for each of these conditions.

Topical Outline	Measurable Objectives
T. 4. a.-e. (Continued)	174. Describe the integrated or coordinated fluid-electrolyte balance mechanisms of the human body.

Training/Education Area: Interpersonal Relationships

Topical Outline	Measurable Objectives
	The student will be able to:
A. Stages of Growth and Development	1. Identify the stage of growth and development of an individual when given basic information about the individual's typical behavior.
B. Mental Health and Basic Needs 1. Mental Health Continuum (Homeodynamics)	2. Using a diagram, describe the mental health continuum (homeodynamics).
a. Adaptive Mechanisms	3. Given a situation of an individual in everyday life, describe adaptive mechanisms which the individual exhibits.
	4. Define a crisis, and will be able to give two examples each of life crises and maturational crises.
	5. Given a situation of an individual in crisis, describe the behavior of the individual that is indicative of an adaptive mechanism. (Behavior indicating examples: anxiety, depression, regression, dependence and self-absorption.)
b. Stages of Grief	6. Given a case situation, identify the stages of grief that a person or family is experiencing as defined by Dr. Elisabeth Kuebler-Ross in "Death and Dying".
	7. Begin to recognize his/her own concept of death by describing it in 200 words or less or by drawing an illustration.
2. Basic Needs	8. Given a description of an individual's behavior, or while interacting with an individual, identify the individual's basic needs which have priority at the time.

<table>
<tr><th>Topical Outline</th><th>Measurable Objectives</th></tr>
<tr><td>C. Self-Awareness (Understanding Self)
1. Self-Concept</td><td>9. Become aware of himself/herself as a person with varying physical, psychological, social, spiritual and developmental needs, and identify in writing what needs he/she had in a given situation and how these needs were or were not met. (Some examples of needs are comfort, acceptance and self-esteem.)

10. In a given situation or interaction, identify his/her own feelings by recording them in a verbatim process recording. (An example of such a situation or interaction is given below.)
Setting: Lounge of Senior Citizen Center
<table>
<tr><th>Resident Says</th><th>Student Says</th><th>Feelings and Reactions of Student and Inferred Feelings of Resident</th></tr>
<tr><td></td><td>"It seems to be pretty busy around here today."</td><td>I was really nervous as to how to start the conversation.</td></tr>
<tr><td>"Yes, this center is a great place. It gives me somewhere to be needed."</td><td></td><td>Mr. ____________ really took off.</td></tr>
<tr><td></td><td>"Needed?"</td><td>Reflective technique.</td></tr>
</table></td></tr>
<tr><td>2. Values and Prejudices</td><td>11. Recognize his/her own values and prejudices and how they may interfere with their professional responsibilities, and will maintain a therapeutic environment to the instructor's satisfaction.</td></tr>
<tr><td>3. Strengths and Limitations</td><td>12. Develop an awareness of his/her strengths and limitations by evaluating self and by peer and instructor evaluations of clinical interactions.</td></tr>
</table>

Topical Outline	Measurable Objectives
D. Uniqueness of the Individual Person	
1. Individual as a Client/Patient	13. In a given situation, recognize the client/patient as a unique individual with varying reactions and responses to stress, and record the individual's particular behavior.
a. Physical, Psychological, Spiritual, Cultural, Developmental and Social Needs	14. Recognize physical, psychological, spiritual, cultural, developmental and social needs of an individual, and describe one need in each area for a particular individual.
b. Clients'/Patients' Apprehensions and Anxieties	15. In a clinical setting, recognize an individual's apprehensions and anxieties, and communicate with the client/patient using techniques that allow the client/patient to express these feelings.
c. Clients'/Patients' Bill of Rights	16. Identify four of the items on the clients'/patients' bill of rights.
d. Clients'/Patients' Right of Privacy	17. Respect the individual's right to privacy, and always provide privacy for the individual and his/her family.
e. Clients'/Patients' Right to Confidentiality	18. Respect the need for confidentiality, and will provide confidentiality for clients/patients and their families by treating all information received as privileged communication outside the classroom and professional setting.
2. Individual as a Family Unit and Community Member	
a. Apprehensions of Family Members	19. In an actual or simulated clinical setting, recognize the relatives' apprehensions and concerns for the client/patient, and will communicate with the relatives using techniques that allow them to express these feelings.
b. Family Values and Prejudices	20. Recognize the individual as a member of a family unit with its own values, prejudices and life style, and accept the individual by therapeutic interaction even if the student's values are different.
c. Member of a Community	21. Recognize the individual as a member of a community with its own norms, and accept the individual for himself.
d. Cultural Background	22. Recognize the individual's cultural background, its influence upon the individual, and accept the individual in a therapeutic manner.

Topical Outline	Measurable Objectives
E. Communication	
1. Components of Communication	23. Recall the components of the communication process.
2. Types of Communication	
a. Verbal	24. Communicate effectively with clients/patients, client's/patient's families, and other professionals of different ages, socio-cultural groups, intellectual levels, and under various degrees of stress to relate or receive a message. Feedback should indicate if the communication was adequately presented.
b. Non-Verbal	25. Given a situation in a clinical setting, identify his/her non-verbal behavior which helps and/or hinders the client's/patient's ability to respond by use of the process recording.
c. Written	26. Given a situation, express himself/herself in written communication concisely, accurately and legibly, using medical vocabulary and observed and validated facts in the form of a written examination, charting or via process recording.
3. Therapeutic Communication and Relationships	
a. Characteristics	27. Differentiate a therapeutic communication from a social conversation by describing their basic differences and by identifying the two types in prepared scripts.
b. Techniques	28. Given a situation, identify the therapeutic communication techniques used during the interaction.
	29. Use therapeutic techniques in a conversation, and identify them in a process recording or a tape recording of the interaction.
c. Barriers and Facilitation	30. Identify six of eight commonly accepted communication techniques which facilitate communication.
	31. Identify six of eight commonly accepted barriers to communication.
	32. Given an interaction, identify the non-therapeutic communication techniques used during the interaction.

Topical Outline	Measurable Objectives
F. Stages of Relationships	33. Identify the stages of the therapeutic relationship by describing the progress through these stages during interactions with an individual.
G. Group Dynamics 1. Responsibilities of the Leader	34. Identify three styles of group leadership, i.e. Democratic (group goal setting), Authoritarian (leader-directed), and Laissez-Faire (non-directed).
2. Interaction Patterns	35. Identify four interaction patterns which exist in group dynamics.
3. Problem Solving Process	36. Participate as a member of a group of students which selects a problem and resolves it using the problem solving process.
4. Factors Affecting Change	37. Given a group situation, identify those factors affecting changes.
G. Health Care Team	38. Recognize that he/she is a member of a health care team.

Some Notes Relating to the Measurable Objectives:

1. It is assumed that many of these objectives will be met adequately only if the students are evaluated during clinical experience.

2. Interaction with patients in a clinical setting might be expected before the usual timing of the clinical experience. It is assumed that this might occur as a volunteer in an appropriate community setting.

3. The clinical experience would not include any physical care, but it would include interacting with individuals. Examples of agencies that might be used to gain contact with people might be nursing homes, senior citizen centers, community health agencies, day care centers, hospitals and families in the community.

Training/Education Area: Microbiology

Topical Outline	Measurable Objectives
A. Microscopes	The student will be able to:
1. Oil Immersion Techniques 2. Use, Care and Cleaning 3. Light Adjustment 4. Resolving Power	1. Given a light microscope and a list of its major parts, identify each part and explain the function and care of each part.
	2. Outline the steps involved and then apply the outline by an actual demonstration in each of the following situations: a. use of an oil immersion objective b. preparation and observation of a wet mount slide c. preparation and observation of a hanging-drop slide
5. Other Types a. Electron b. Dark-Field c. Phase 6. Wet Mounts	3. Describe in one or two sentences the basic principle and use of each of the following types of microscopes: a. light b. dark-field c. electron
B. Staining Techniques 1. Simple 2. Gram 3. Acid Fast 4. Special	4. Given samples of the following bacteria as unknown: Bacillus subtilis, Aerobacter aerogenes, Mycobacterium tuberculosis, and Staphylococcus aureus; characterize in the laboratory each of the unknowns for Gram reaction, acid-fastness, capsule formation and endospore formation using the following stains: a. simple b. Gram c. acid-fast d. negative e. spore
C. Sterile Technique 1. Inoculation 2. Subculture	5. Given the appropriate equipment, transfer bacteria from an original culture to a sub-culture without allowing either to become contaminated.
3. Serial Dilutions and Plate Count	6. Given an outline of techniques and a bacterial suspension, determine and calculate the concentration of the original suspension through the use of serial dilutions and plate counts.
4. Hand Washing	7. Develop an awareness of the importance of handwashing prior to and after laboratory work via the following procedures: a. various techniques of handwashing are tried b. wash water samples from each technique will be plated for bacterial counts

Topical Outline	Measurable Objectives
C. 4. (Continued)	7. c. fingers will be touched to sterile plates of media after each technique d. the plates will be observed for bacterial growth e. the student will evaluate the relative effectiveness of the various handwashing techniques
5. Cultures from Common Objects	8. Develop an awareness of the role of fomites in the dissemination of microbes by culturing microorganisms from selected fomites and determining the types of microbial population from each fomite.
	9. State the four criteria which formulate Kock's postulates in the determination of a microbe as a pathogen.
D. Control 1. Definitions a. bactericidal b. bacteriostatic	10. Define and differentiate between the terms bactericidal and bacteriostatic as well as microbicidal and microbiostatic.
2. General Methods a. Physical b. Chemical c. Biological d. Radiation e. Sterilization	11. Given a list of antimicrobial agents and a list of antimicrobial actions, select those actions which characterize each antimicrobial agent with 80% accuracy.
3. Invivo a. Phagocytosis b. Lysis c. Agglutination d. Chemo-Therapeutic Agents e. Toxins and Antitoxins 4. Sterilization Techniques E. Characteristics of Bacteria (Includes Spirochetes)	12. Given a list of chemotherapeutic agents, describe their antimicrobial action.
1. Physiology	13. Given the names and structural formulas for the following compounds: acetyl CoA, ketoglutaric acid, succinic acid, glucose, glyceraldehyde 3-phosphate, pyruvic acid, citric acid, and oxaloacetic acid; order the compounds according to the process of respiration with 80% accuracy.
	14. Describe the relative magnitudes of energy released in the following processes as a comparison of the efficiency of the processes: a. fermentation b. aerobic glycolysis c. citric acid cycle

Topical Outline	Measurable Objectives
E. 1. (Continued)	15. Given the method used by a microorganism in obtaining food, classify that microorganism as one of the following: a. chemosynthetic autotroph b. photosynthetic autotroph c. chemosynthetic heterotroph d. photosynthetic heterotroph
2. Anatomy	16. Given a diagram of a procaryotic cell, label the following cell structures: a. nucleoplasm b. cytoplasm c. ribosomes d. cytoplasmic membrane e. cell wall f. capsule g. flagellum h. endospore
3. Organization	17. Label the structures shown in an electron photomicrograph of a typical bacterial cell, and explain how the organization of the cell enhances the necessary functions of the cell.
4. Enzymes 5. Cultivation Techniques 6. Differential Media 7. Pure Culture	18. Given three identifiable bacterial samples, select three cultivation techniques, and demonstrate and evaluate successful use of these techniques.
	19. Demonstrate the use of differential and selective media by inoculating such media with selected organisms, and by observing the growth of the organisms.
	20. Given one gram of garden soil, outline a procedure and follow that procedure in isolating pure cultures of bacteria from the soil sample.
8. Reproduction and Growth Curve	21. Given a typical bacterial growth curve, identify the following phases of the curve: a. lag phase b. accelerated growth phase c. log growth phase d. decelerated growth phase e. stationary phase f. accelerated death phase
9. Transformation and Transduction Cycles 10. Mutation	22. In one short paragraph for each, explain the process and genetic significance of transformation, transduction, conjugation and mutation.

Topical Outline	Measurable Objectives
F. Protists (Survey of Microorganisms)	
1. Characteristics 2. General Classification Scheme 3. General Types a. Bacteria	23. Given a list of general characteristics of protists and a list of general types of protists, match the items in the two lists with 80% accuracy.
b. Fungi c. Virus d. Other 4. Pathogenic versus Non-Pathogenic	24. Given a list of the major groups of protists, list two distinguishing morphological features which separate each major group.
G. Characteristics of Pleuropneumonia H. Characteristics of Molds and Yeasts (Fungi) I. Characteristics of Rickettsia J. Characteristics of Viruses K. Characteristics of Protozoa	25. List two distinguishing characteristics of mycoplasma, and state three typical symptoms of the disease they cause in humans.
L. Normal Flora of the Human Body	26. Discuss the significance of the normal flora of the gastrointestinal tract. 27. Discuss the significance of the normal flora of the skin. 28. Discuss the significance of the normal flora of the oral and nasal cavities.
M. Epidemiology 1. Types of Pathogens a. Cultural Characteristics b. Special Tests c. Transmission and Control d. Symptoms of Infection	29. Construct a chart which identifies at least one major human disease caused by each of ten genera of bacteria. The chart should list the main descriptive characteristics, main symptoms of infection, modes of transmission, preventive measures and treatment. The ten genera should include Staphylococcus, Streptococcus, Neisseria, Clostridium, Mybacterium, Salmonella and Treponema. 30. Construct a chart which identifies twelve human viral diseases. The chart should list the main symptoms of infection, modes of transmission, preventive measures and treatment. The twelve human viral diseases should include smallpox, chickenpox, polio, influenza, rabies, encephalitis, common cold, measles and mumps.

Topical Outline	Measurable Objectives
M. 1. a.-d. (Continued)	31. Identify the major human diseases caused by seven genera of protozoa, and list the main descriptive characteristics, main symptoms of infection, modes of transmission, preventive measures and treatments for each genera. The seven genera of protozoa should include plasmodium, trypanosoma, entomoeba, trichamonas and leishmania. 32. List one significant human disease, its symptoms of infection, its mode of transmission for each of the following: a. fungi b. roundworms c. flukes d. tapeworms e. arthropods
2. Susceptibility to Infection a. State of Well Being b. Age c. Disease State d. Chemo-Therapeutic and Radiation Effects e. Burns f. Ethnic and Environmental State	33. State one method in which each of the following makes man more susceptible to infection: a. age of individual b. burns c. use of drugs d. exposure to radiation e. presence of another disease f. environmental stress g. ethnic background
3. Body Defenses (Normal Mechanisms) a. State of Well Being b. Age c. Skin d. Mucous Membrane e. Cilia f. pH g. Inflammatory Response h. Immune Response	34. Write a paragraph of no more than 100 words on the role of each of the following normal body defense mechanisms including at least two specific methods for each mechanism by which the body prevents invasion by microorganisms: a. state of well being b. age c. skin d. mucous membrane e. cilia f. pH g. inflammatory response h. immune response 35. Describe and give an example of at least one body defense mechanism involved in each of the following processes: a. phagocytosis b. lysis c. agglutination 36. Define and relate the origin of each of the terms toxin and antitoxin to either the host or the pathogen.

Topical Outline	Measurable Objectives
M. 4. Immunity a. Specific and Non-Specific Factors in Blood 1. Complement 2. Ability to Make Antibody	37. Use the following terms in writing an accurate model of the process of complement-fixation: a. antigen b. antibody c. serum d. lysis e. bacteria f. complement g. heat
3. Antigen-Antibody Reaction	38. Given the situation where a patient receives a gamma globulin injection, and given a written paragraph which hypothetically explains the process of immunity within that patient, separate the correct from the incorrect statements in the paragraph with 80% accuracy.
b. Natural (Active and Passive) c. Acquired (Active and Passive)	39. Given the following series of conditions involving immunity, match each condition with the appropriate type of immunity with 80% accuracy: Type of Immunity a. natural b. acquired 1. active 2. passive Conditions a. a gamma globulin injection b. resistance to polio entrance c. inoculation of attenuated polio d. ticks die when placed upon patient e. resistance to small-pox vaccination
N. Applied Microbiology 1. Industrial 2. Water 3. Sewage 4. Dairy Products 5. Air 6. Food	40. Distinguish between food intoxication and food infection. 41. Name the organisms involved and describe in a general way (i.e. endotoxin, enterotoxin, exotoxin) the bacterial product which causes such symptoms. 42. Describe food sources from which one might expect various types of intoxication/infections to be contracted. Be aware of food handling/preparation/storage procedures which tend to minimize this problem, or maximize it if not properly followed.

Topical Outline	Measurable Objectives
N. 1.-6. (Continued)	43. Given the following list of processes and products of applied microbiology and the following list of microorganisms, match the appropriate microorganisms with each process or product with 80% accuracy. Process or Product a. Beer b. Vinegar c. Water Quality Testing d. Roquefort Cheese e. Buttermilk f. Chloramphenicol g. Wine h. Bread i. Cultured Sour Cream j. Swiss Cheese k. Bacitracin Microorganisms a. Streptococcus lactis b. Streptomyces venezuelae c. Bacillus subtilis d. Saccharomyces cerivisiae e. Saccharomyces ellipsoideus f. Acetobacter g. Penicillium h. Escherichia coli i. Propionibacterium
O. Soil and Environmental Degradation	44. Use each of the following list of terms in writing a description of the role of microorganisms in natural and man-made ecosystems: a. nitrification by soil bacteria b. decomposers c. coliforms in sewage d. biodegradation e. B. O. D. of water f. exoenzymes g. heterotrophic h. substrate i. eutrophication j. aerobic k. anaerobic

Training/Education Area: Nutrition

Topical Outline	Measurable Objectives
A. Food and Its Relation to Health	The student will be able to:
1. Food: Sources, Meaning and Problems a. Animal b. Vegetable c. Synthetic d. Environmental Effects e. Geographical Effects	1. Briefly describe each of the following, and discuss the interrelationships among the following: a. The relationship of food to health. b. The animal, vegetable and synthetic sources of food. c. The effects environment and geography have on food availability and selection. d. The meaning of food and "Why people eat as they do".
2. World Considerations a. Diets of Various Countries 1. Cultural Values 2. Religious Values	2. State at least two ways in which culture and religion can affect the diet of a society by giving examples in an oral group discussion.
3. Psychological, Sociological and Economic Factors	3. Identify three psychological, three sociological and three economic factors that affect the food selection of a young healthy adult of three countries: the U.S. and two other countries.
b. Supply and Demand	4. State five facts that will illustrate the relationship of the world food supply to the world's population demands.
c. Nutrition versus Malnutrition	5. Compile a list of clinical manifestations of six physical characteristics of a malnourished teenager.
B. The Nutrients: Their Characteristic Functions, Digestion, Absorption, Transport, Metabolism, Sources, Daily Requirements and Energy Values	
1. Amino Acids and Proteins	6. List the major sites of digestion for proteins, carbohydrates, and lipids.
2. Carbohydrates	7. List the major sites of absorption for proteins, carbohydrates, and lipids.
3. Lipids	8. Select the circulatory system (blood or lymph) into which carbohydrates, fat, and protein are absorbed.

Topical Outline	Measurable Objectives
B. 3. (Continued)	9. Given a menu for the main meal of a day, identify the foods that supply protein, lipids, and carbohydrates.
	10. State the normal and/or recommended ranges in grams and percent of calories of carbohydrate, lipid and protein to be included in the daily diet of a young adult of moderate activity.
	11. State the average physiological fuel value for proteins, lipids, and carbohydrates, and given a diet prescription, calculate the calorie content of the diet.
	12. Define the term metabolism; discuss protein quality, protein-calorie malnutrition, and functions of essential amino acids; and state three functions of dietary lipids.
4. Minerals	13. Given the R.D.A. and food tables as references, determine the adequacy of a given day's diet for calcium and iron.
a. Fluid and Electrolyte Balance b. Co-Factors	14. Given the list of: Na^+, K^+, Ca^{+2}, HCO_3^-, PO^{-4}, Cl^- and protein, match each substance with its major extracellular or intracellular location(s), and describe, in writing, water balance upon shifts of these substances across cellular membranes.
c. Structural Minerals (e.g. Calcium, Phosphorous)	15. Given a list of major physiological functions of minerals, match the minerals with their functions.
5. Vitamins	16. After defining vitamins, write a paragraph that clarifies the use of naming by letter designation and the use of chemically descriptive names. Given a label from a multi-vitamin preparation, match the common with the chemical names.
a. Fat Soluble	17. Name the four fat-soluble vitamins in a short paragraph that includes one major function for each of the four fat-soluble vitamins, one effect of deficiency and three food sources.
b. Water Soluble	18. Given a list of the water soluble vitamins, match the vitamin with the corresponding function and/or deficiency state.

Topical Outline	Measurable Objectives
B. 5. b. (Continued)	19. Using a Recommended Dietary Allowances chart and food tables, estimate the adequacy of a given diet for ascorbic acid, vitamin A, riboflavin and thiamine.
C. Metabolic Interrelationships of the Nutrients	20. Given the following list of major metabolic interrelationship patterns, describe in a short paragraph each interrelationship: a. carbohydrates, B-vitamins and phosphorous b. protein and calories c. iron and ascorbic acid d. lipids, fat-soluble vitamins and bile salts e. calcium, phosphorous, and vitamin D
D. Food Selection 1. Food Groups	21. Plan a menu for one day for a young adult so that all food groups of the Basic Four are included in the diet in adequate amounts for that age.
2. Meal Planning (Use of Food Composition Tables) 3. Factors Influencing Food Habits and Dietary Planning a. Nutritional Factors	22. Using the menu completed under measurable objective #21, and food composition tables, accurately calculate the levels of energy, protein, and iron content of the day's intake.
b. Psychological and Esthetic Factors c. Social and Economic Factors d. Cultural Factors e. Geographic Factors	23. Given a description of a family and a brief summary of the psychological, cultural, geographic, and economic factors involved, plan a menu for one day containing foods that would be acceptable to the family and meet their nutritional needs as determined by the Basic Four: (e.g. a 36 year old, black woman on welfare, 75 lbs. overweight, living in Atlanta, Georgia with two children, (ages 1 and 5).
f. Religious Factors	24. Given a typical hospital menu, select all items listed that would be objectionable to a member of: the Orthodox Jewish faith, the Seventh Day Adventist Church, and the Church of the Latter Day Saints (Mormon Church).
g. Technological Factors	25. State five differences, which may be attributed to industrial food technology, in the food supply to a family living in an isolated area compared with a similar family in an urban setting.
	26. Plan a shopping list for foods to be taken backpacking into a remote camping area for a three-day stay that will provide a balanced dietary intake for one person.

Topical Outline	Measurable Objectives
D. 3. h. Multi-Media Effects	27. Contribute to a small group discussion on "how multi-media affects food selection," by giving a minimum of three examples.
E. Safeguarding the Food Supply 1. Food Borne Diseases 2. Food Quality and Safety	
a. Variables in Production	28. Using references available, discuss the following statement: "Crops grown on soil that has been depleted from overuse are deficient in nutrients."
b. Comparison of Sources	29. Using references, list which nutrients are added to enrich wheat flour under the Federal Food and Drug Administration guidelines.
c. Effects of Processing 1. Refining 2. Milling 3. Additives	30. List three or four food additives, their purposes and whether they are to modify a property or to improve the nutritional value of the food.
d. Storage and Handling (Commercial and Home) e. Preparation (Commercial and Home)	31. Given a list of food items, tell how to store the items properly to maintain quality and safety.
f. Control of Quality 1. Governmental (e.g. Health Department, FDA, USDA) 2. Personal	32. Given a list of areas of food handling that need enforcement of controlling standards, match these with the agency responsible for inspection and enforcement.
F. Nutritional Needs in Life	
1. Pregnancy and Lactation	33. Given one day's menu for an adequate food plan for a 25 year old woman, change the menu to adequately meet the needs of pregnancy and lactation.
2. Infancy	34. Compare human and cow's milk for the human infant for protein and carbohydrates by giving the reasons for the routine modifying of cow's milk.
3. Youth	35. Using references, the student will be able to compare the nutrient and calorie needs for preschool (2-6), school-age (6-12) and adolescent youth.
4. Maturity	(See measurable objectives #6 through #19.)
5. Aged	36. Given a list of the major nutrient classes and energy, compare whether or not the need is the same, greater or less for the aged than it is for the young adult.
	37. Given a list of physiological and biochemical changes, accurately identify those that occur in aging.

Topical Outline	Measurable Objectives
G. Modifications of Normal Diets	
1. Overweight and Underweight Conditions	38. Given a standard height-weight table, determine what his/her desirable weight range should be.
	39. Given a basic diet pattern for an adult female in good health, state how the diet should be modified to meet the following special needs: weight loss indicated and weight gain indicated.
2. Gastrointestinal Tract Disturbances	40. Given a particular disease or disturbance of the GI tract, plan using references, a dietary regime and write a short paragraph that could be used in counseling the patient. (A list of GI tract disturbances would include diarrhea, constipation, peptic ulcer and gastritis.)
3. Metabolic and Genetic Disorders	41. Given a normal well-balanced menu for one day, recognize the major dietary modifications necessary for six of the most common metabolic genetic diseases: diabetes, hypoglycemia, gout, hyper-and hypothyroidism, Addison's disease, PKU (Phenylketonuria) and cystic fibrosis.
4. Emotional Disorders	42. Perform as a member of a health-care team in a role playing situation, counseling an alcoholic, an emotionally disturbed person, and a person dependent on drugs, concerning each of their nutritional needs and encouraging each of them to include foods from the Basic Four groups, for adequacy.
5. Cardiovascular and Renal Disorders	43. Given six of the possible common disorders of the cardiovascular and renal system and using references, state a major dietary modification required for each, and write one or more foods to be avoided for each.
6. Infectious Diseases	44. Match symptoms and diet changes necessary for individuals who have fever and/or an infectious disease.

Topical Outline	Measurable Objectives
G. 7. Pre-Surgical and Post-Surgical a. Progressive Diets b. Tube Feeding H. Nutrition and Public Health Challenges 1. Consumer Education	45. Given a list of beverages and using references, select with 100% accuracy three beverages for each of the following possible needs of surgical patients and/or burned patients: high protein, high vitamin C and high potassium.
a. Changing of Food Habits	46. Working in groups of four, design a project to work with a small group of nutritionally high-risk individuals (elderly, preschoolers, pregnant teenagers, etc.). The aim of the project is to be able to identify the nutritional needs, provide useful information, develop an awareness of good food habits and to bring about a change in the food habits of the participants.
b. Marketing Evaluation 1. Advertising 2. Convenience 3. Packaging and Display of Food 4. Fads	47. Bring to the class two examples of food packaging, convenience items and advertising, and discuss the effects of food industry marketing approaches on the consumer.
	48. Given four claims of health food faddists, write a short paragraph applying scientific nutritional principles to refute or support each claim.
2. Mechanics for Change a. Services and Organizations 1. Local 2. State 3. National 4. International	49. After investigation of resources available, list five organizations that provide information and programs to help change dietary habits.
b. Multi-Media/Mass Communication	50. Write and tape a 30-second radio spot on nutrition.

Training/Education Area: Public Health and Health Care Delivery

Topical Outline	Measurable Objectives
A. Public Health	The student will be able to:
1. Population Trends and Public Health	1. Given graphic statistics on population trends in the United States, compare current population trends with population trends of the past five census tracts. (This material will be collected and given to each instructor in the form of a workbook.)
2. Statistics in Public Health and Medical Research	2. Recognize and review the accepted national method of collection and storage of public health statistics.
	3. Define the following terms as they are used in public health statistics: a. biometrics b. demography c. birth rate (use a formula) d. death rate (use a formula) e. morbidity f. mortality g. ten leading causes of death
3. Health Planning Process a. Planning Process 1. Assessment of Needs 2. Delineation of Problem 3. Planning 4. Implementation 5. Evaluation	4. List and describe the characteristics of the five basic steps in the problem-solving method as applied to health planning.
b. Continuity of Care 1. Prevention 2. Emergency 3. Acute 4. Chronic 5. Sub-Acute or Rehabilitation 6. Custodial	5. Given the definition of continuity of care and the definitions of the six categories of continuity of care listed below, give three examples of one individual moving from one category of care to another: a. preventive b. emergency c. acute d. chronic e. sub-acute or rehabilitation f. custodial (Definitions from the State Department of Health will be provided to the instructor.)
c. Resources: Needed and Available 1. Manpower 2. Facilities 3. Services 4. Financial 5. Education/Training	6. Given an example of a consumer seeking a specific health service in a community, identify which of the following resources is missing: a. manpower b. facilities c. services d. financing e. education/training

Topical Outline	Measurable Objectives
A. 3. d. Legislation/Regulation Review	7. Discuss the relationship of legislation/regulation review to the consumer as well as the provider utilizing basic knowledge of the legislative process at the local, state and federal levels.
4. Public Health Problems a. Problem Identification and Priorities	8. Given a description of a community in turmoil, isolate three community problems and determine which of the three requires the most immediate action. (The instructor will be provided with a brief description of a community in turmoil with at least five observable problems.)
b. Analysis of Public Health Problems (Epidemiology) 1. Host 2. Agent 3. Environment	9. Given the above situation, name the host, agent and environment which are operational in the priority problem identified in objective #8.
c. Analysis of Personal Health Problems (Etiology) 1. Cause 2. Effect 3. Treatment	10. Having completed objectives #8 and #9, define the cause, effect and treatment of the personal health problem existent in the priority which was established in objective #8.
d. Chain of Infection 1. Etiologic Agent 2. Reservoir 3. Mode of Escape 4. Mode of Transmission 5. Mode of Entry 6. Susceptible Host	11. Explain the components of the chain of infection which are: a. etiologic agent b. reservoir c. mode of escape d. mode of transmission e. mode of entry f. susceptible host
5. Infections and Public Health a. Environmental Infection Hazards	
1. Animal Infections Transmissible to Humans	12. Given the host, agent and environmental concept, apply the concept to the major reported animal infections transmissible to humans by: a. identifying one animal infection transmissible to humans b. describing the chain of that infection c. selecting an appropriate method of interrupting the chain
2. Human Infections in Which the Infective Agent has Requisite Pre-Transmission Period of Extra-Human Residence	13. Given the host, agent and environmental concept, apply the concept to the major reported human infections residing in extra-human sources during pre-transmission period by: a. identifying one human infection as described above b. describing the chain of that infection c. selecting an appropriate method of interrupting the chain

Topical Outline	Measurable Objectives
A. 5. a. 3. Human to Human Infection Transmission in Which the Infective Agent may Persist in the Environment	14. Given the host, agent and environment concept, apply the concept to the major reported human to human infections in which the infective agent may persist in the environment by: a. identifying one infection which fits this description b. describing the chain of that infection c. selecting an appropriate method of interrupting the chain
4. Diseases Caused by Preformed Microbial Products Without True Infection of Diseased Host	15. Given the host, agent and environment concept, apply the concept to the major reported diseases caused by preformed microbial products without true infection of the diseased host by: a. identifying one infection which fits this description b. describing the chain of that infection c. selecting an appropriate method of interrupting the chain
b. Control of Infectious Diseases Acquired from Environment	
1. Infectious Diseases Carried by Water	16. Describe two approved methods of controlling infectious diseases carried by water.
2. Infectious Diseases Carried by Milk and Other Foods	17. Describe two approved methods of controlling infectious diseases carried by milk and other foods.
3. Animal Reservoirs and Arthropod Vectors of Infectious Diseases	18. Describe two approved methods of controlling infectious diseases transmitted by arthropod vectors and stored in animal reservoirs.
	19. List the major infectious diseases found in animal reservoirs and transmitted by arthropod vectors.
4. Infectious Diseases Carried by Air	20. Describe two approved methods of controlling infectious diseases carried in the air.
5. Infectious Diseases Carried in the Soil	21. Describe two approved methods of controlling infectious diseases carried in the soil.
	22. List the major infectious diseases carried in the soil.
c. Humans as Infection Hazard	
1. Primarily Enteric Infections	23. Considering the human as a potential infection source, list two enteric infections, and describe the chains of those infections (as determined in objective #11).

Topical Outline	Measurable Objectives
A. 5. c. 2. Primarily Respiratory Tract Infections	24. List two respiratory tract infections, and describe the chains of those infections.
3. Venereal and Other Direct Contact Infections	25. List two venereal infections, and describe the chains of those infections.
4. Infections Which Can be Artificially Transmitted by Inoculation	26. List two infections which are artificially transmitted by inoculation, and describe the chains of those infections.
d. Control of Infections Acquired from Humans	27. List five methods accepted by the State Department of Health for controlling the spread of infections from one human to another.
6. Other Public Health Hazards a. Accidents b. Poisons, Drugs, and Food additives c. Pollution (Air, Water, Soil, Noise) d. Natural Disasters (Fire, Flood, Earthquake, Hurricane, Tornado) e. Sanitation Problems f. Epidemics	28. Given examples and rates of incidence of each of the following categories of public health hazards, suggest a method of prevention and control of each category in four sentences or less: a. accidents b. poisons and drugs c. food additives d. pollution, (air, water, soil, noise) e. natural disasters (fire, flood, earthquake, hurricane, tornado) f. sanitation problems g. genetic hazards h. epidemics (Resources will be made available.)
7. Health Protection a. Pre-Natal b. Infancy c. Pre-School d. School-Age e. Adolescence f. Middle Age g. Maturity (Instructor may choose another age grouping.)	29. Identify one example of health protection for each of the following age groups: a. pre-natal b. infancy c. pre-school d. school-age e. adolescence f. middle age g. maturity
8. Rehabilitation a. Psychological b. Sociological c. Physical	30. Write one example of rehabilitation for each of the following problem areas. a. Mental and Emotional Inadequacies 1. mentally ill 2. alcoholic 3. drug addict 4. mental retardate b. Sociological Inadequacies 1. isolation 2. unemployment c. Physical Inadequacies 1. crippled child 2. handicapped adult 3. disabled elderly 4. speech disorders

Topical Outline	Measurable Objectives
B. Health Care Delivery	
1. Health Care Delivery System	
a. Some Factors to Consider	
1. Geographic Location	31. Compare the health care delivery system of one geographic location to the health care delivery system of a contrasting geographic location.
2. Characteristics of People	32. Develop an awareness of the effect of the characteristics of a given population upon the health care delivery system that serves the population, through: a. identifying the characteristics of a given population (race, ethnic origin, age, religion, etc.) b. observing the health care system that serves that population c. considering the inter-related factors d. exploring the adequacy of the existing system by listing its pros and cons in no more than 100 words e. suggesting one alternate health care delivery system
3. Major Occupations	33. Develop an awareness of the effect of the major occupations in a given community upon the health care delivery system that serves that community, through: a. identifying the major occupations in a given community b. observing the health care delivery system in that community c. exploring the adequacy of the existing system by listing its pros and cons in no more than 100 words d. suggesting one alternate health care delivery system
4. Educational Systems	34. List three educational systems and describe each system's effect upon the health care delivery system.
5. Environmental Factors	35. Describe five environmental factors that have a direct effect upon the health care delivery system.
b. Community Characteristics	
1. Community Organization	36. Construct an organizational chart of the governing body of a given community. (city or county)

Topical Outline	Measurable Objectives
B. 1. b. 2. Mechanisms for Planning	37. Utilizing the organizational chart constructed in objective #36, solve a given health problem within that community framework by devising a plan using no more than ten steps.
3. Multiple Causation	38. Utilizing the problem and community information from objectives #36 and #37, identify at least five inter-related causative factors of that problem.
c. Financial Aspects 1. Health Care Costs	
2. Health Insurance (Private, Government, Group, Individual)	39. Through lecture and discussion, be aware of the various types of health insurance and describe in 200 words or less the differences between: a. government versus private b. group versus individual
3. Preventive Health Care Insurance and Curative Health Care Insurance	40. Given an example of preventive health care insurance (HMO) and curative health care insurance (common carriers such as Blue Cross - Blue Shield), examine each type, select an individual preference and support the selection in a paragraph of 200 words or less.
d. Organizational Components 1. Public Agencies and Organizations a. International b. National c. State d. Local 2. Educational/Training Institutions 3. Private Organizations and Associations	41. Through lecture and discussion, define in four sentences or less the following organizational components as related to health care systems. a. Public Agencies and Organizations 1. international 2. national 3. state 4. local b. Educational/Training Institutions c. Private Organizations and Associations d. Professional Associations and Societies
4. Professional Associations and Societies	42. Given a list of ten organizations, e.g. Harvard, Rockefeller Foundation, American Cancer Society, Visiting Nurse Association, PAHO, etc., state with 100% accuracy the organizational component to which each relates.
e. Current Trends 1. Consumer Participation in Decision Making 2. Innovations in Health Care Planning 3. Health/Medical Legislation	43. Through group discussion of the following areas: a. consumer participation in decision making b. innovations in health care planning c. health/medical legislation be familiar with current trends in the health fields. Attend class and participate in the discussion.

Topical Outline	Measurable Objectives
B. 2. Teamwork in Health Care Delivery a. Principles 1. Continuity of Care 2. Understanding and Using Health Services	44. Given an example which would include necessary information, a. identify five health needs of the individual b. name five possible health team members to meet these needs c. name five possible agencies involved d. state one method of coordinating the care for this individual. (Suggested example: An unemployed 43 year old white male suffering from silicosis following 10 years of employment at a granite quarry, seeks health care at the Neighborhood Health Center.)
3. Image of Health Worker	45. Following a panel presentation of three (3) or more consumers, be conscious of the health workers image as perceived by the consumer. This will be accomplished by the presentation coverage of at least five of the following items: a. Differences that exist between health occupations, e.g. 1. psychologist vs. psychiatrist 2. optometrist vs. ophthamologist b. Would you be more likely to follow a d diet prescribed by a physician or a nutritionist? c. Do you feel a nurse is capable of coun s seling you regarding your child's behavior? d. What does a sanitary engineer do? e. What is a physical therapist? an occupational therapist? a respiratory therapist? f. Who provides you with health care when you are ill? g. Is it possible to be cared for in your home? h. Where should health workers be educated, in colleges and universities, in vocational schools, in hospitals, or on the job? i. Do you feel health workers are fairly compensated? j. Would you prefer to die at home, in a hospital or in a nursing home? Who would you like to be present?
4. Specialty and Professional Self-Interests	

Topical Outline	Measurable Objectives
B. 2. b. Types of Health Care Delivery Systems	
1. Physicians a. Solo Practice b. Team Practice c. Group Practice	46. Become acquainted with various types of health care delivery systems including less common systems such as Health Maintenance Organizations and Kaiser Permenente' in the United States and health care delivery systems in other nations.
2. Public and Private Agencies	
3. Other Systems (HMO, Kaiser Permenente', Systems of Other Nations)	47. Through visual aids, view other health care delivery systems, e.g. HMO, Kaiser Permenente', and health care delivery systems of other nations.
c. Organization of the Health Care Team 1. Components or Specialties 2. Functions 3. Problem Solving via a Cooperative Approach	48. Given a situation where the health care system is inadequate, state: a. team member composition and the specialty groups represented b. team member functions c. choose a method of problem solving utilizing a cooperative approach. (Suggested situations will be provided to the instructor.)
d. Consumer Participation 1. Input Planning 2. Protection	49. Determine and list the membership of consumers and providers on a mock advisory board of a health agency. The decision should support two factors safeguarding: a. input planning b. protection of health standards
e. Health Manpower 1. Distribution 2. Needs and Demands 3. Supply and Resources	50. Given the necessary data pertaining to South Dakota (vital statistics, public health statistics), become aware of health manpower in relationship to health care delivery through: a. studying the distribution of manpower (physicians, nurses, sanitarians, etc.) b. studying the relationship of needs and demands of consumers c. studying the supply and resources of providers Based on the above study, suggest by writing 200 words or less one change in health manpower that would improve the health care delivery system.

APPENDIX J

MEAN DEGREE OF IMPORTANCE RATINGS OF PERFORMANCE OBJECTIVES BY PROGRAM TYPE

KEY FOR DEGREE OF IMPORTANCE RATINGS*

PROGRAM NUMBER	PROGRAM	NUMBER OF PROGRAMS INCLUDED IN THE TABULATION
2	Related Health Occupations Course	1
3	Medical Secretary	1
6	Medical Social Services	1
10	Dental Hygiene	1
12	Dietician	1
13	Public Health Science	1
15	Health and Medical Services Administration	1
17	Certified Laboratory Assistant	1
18	Medical Laboratory Technician	1
19	Medical Technology	7
20	Nurses Aide	1
21	Licensed Practical Nurse	3
22	Associate Degree R.N.	2
23	Diploma R.N.	2
24	Baccalaureate R.N.	3
25	Pharmacy	1
26	Physical Therapy Assistant	1
27	Pre-Clinical Physical Therapy	2
28	Psychiatric Technician	1
29	Radiologic Technology	5
30	Respiratory Therapy Technician	2
31	Respiratory Therapy	3
32	Anesthesia	2

*Not all programs responded, or else they responded too late to be included in the tabulation.

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES
0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

PRIMARY CORE CURRICULUM

OBJ NO. \ PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
1	2.0	0.0	2.0	1.0	3.0	3.0	2.0	2.0	1.0	1.7	0.0	2.3	2.5	2.0	2.3	2.0
2	2.0	0.0	2.0	3.0	3.0	0.0	2.0	2.0	2.0	1.4	2.0	3.0	3.0	3.0	3.0	3.0
3	3.0	0.0	1.0	0.0	2.0	3.0	2.0	3.0	1.0	0.8	2.0	3.0	2.5	2.0	1.3	1.0
4	3.0	0.0	1.0	2.0	2.0	0.0	2.0	3.0	1.0	1.8	2.0	2.6	2.5	2.0	2.3	2.0
5	3.0	0.0	2.0	2.0	2.0	0.0	2.0	3.0	1.0	1.5	2.0	2.3	2.5	2.0	1.3	1.0
6	3.0	0.0	3.0	3.0	2.0	0.0	2.0	3.0	2.0	2.0	2.0	2.6	2.5	2.0	2.6	3.0
7	3.0	0.0	2.0	2.0	2.0	3.0	2.0	2.0	1.0	1.2	2.0	2.3	3.0	2.0	2.6	3.0
8	3.0	0.0	2.0	1.0	2.0	0.0	3.0	2.0	0.0	1.8	2.0	2.3	3.0	2.0	2.6	3.0
9	1.0	0.0	2.0	3.0	2.0	0.0	3.0	2.0	0.0	1.8	1.0	1.3	2.5	2.5	2.3	1.0
10	2.0	0.0	3.0	2.0	2.0	0.0	3.0	2.0	0.0	2.2	1.0	2.6	2.0	2.5	3.0	1.0
11	3.0	0.0	2.0	3.0	1.0	0.0	3.0	2.0	0.0	2.4	2.0	2.6	2.0	3.0	2.6	2.0
12	1.0	0.0	2.0	2.0	2.0	0.0	3.0	1.0	0.0	1.7	1.0	2.0	1.5	2.5	2.3	0.0
13	2.0	0.0	2.0	3.0	1.0	0.0	3.0	2.0	2.0	2.4	1.0	3.0	3.0	3.0	3.0	2.0
14	3.0	0.0	2.0	2.0	2.0	0.0	3.0	2.0	2.0	2.1	2.0	3.0	2.5	3.0	2.6	1.0
15	3.0	0.0	3.0	2.0	2.0	0.0	3.0	3.0	2.0	2.7	2.0	3.0	3.0	3.0	3.0	3.0
16	2.0	0.0	3.0	2.0	2.0	2.0	3.0	3.0	2.0	2.5	2.0	2.6	3.0	3.0	2.6	2.0
17	3.0	0.0	3.0	0.0	2.0	0.0	3.0	3.0	2.0	2.7	2.0	3.0	3.0	3.0	3.0	3.0
18	2.0	0.0	3.0	2.0	1.0	0.0	3.0	3.0	1.0	2.5	2.0	3.0	2.5	2.5	3.0	3.0
19	1.0	0.0	2.0	2.0	2.0	3.0	3.0	3.0	1.0	2.4	1.0	3.0	2.5	2.5	3.0	2.0
21	1.0	0.0	1.0	2.0	2.0	3.0	1.0	3.0	2.0	2.7	0.0	2.6	2.5	2.5	2.6	1.0
22	1.0	0.0	0.0	2.0	1.0	0.0	1.0	3.0	2.0	2.1	0.0	2.6	2.5	2.5	2.6	1.0
23	1.0	0.0	0.0	2.0	2.0	0.0	1.0	3.0	2.0	2.2	0.0	2.6	2.5	2.5	2.6	1.0
24	1.0	0.0	0.0	2.0	1.0	0.0	1.0	3.0	2.0	2.2	0.0	3.0	2.0	2.0	2.3	1.0
25	1.0	0.0	0.0	2.0	2.0	0.0	1.0	3.0	2.0	2.5	0.0	3.0	2.5	2.5	2.6	2.0
26	1.0	0.0	0.0	2.0	2.0	0.0	1.0	3.0	2.0	2.5	0.0	3.0	2.0	2.5	2.6	1.0
27	2.0	0.0	0.0	2.0	2.0	0.0	1.0	3.0	2.0	2.1	0.0	3.0	2.5	2.5	2.6	1.0
28	2.0	0.0	1.0	2.0	3.0	0.0	1.0	3.0	2.0	2.7	1.0	3.0	2.5	2.5	2.6	2.0
29	2.0	0.0	2.0	2.0	3.0	0.0	1.0	3.0	2.0	2.5	1.0	3.0	2.5	2.5	2.6	2.0

OBJ NO. \ PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
30	2.0	0.0	1.0	2.0	3.0	0.0	1.0	3.0	2.0	2.4	1.0	3.0	2.5	2.5	2.6	2.0
31	2.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	1.8	0.0	3.0	2.0	2.5	2.6	2.0
32	2.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	2.0	1.7	0.0	2.6	1.5	2.5	2.6	2.0
33	1.0	0.0	1.0	2.0	2.0	2.0	1.0	2.0	1.0	1.2	0.0	3.0	2.0	2.5	2.6	1.0
34	2.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	2.0	1.0	3.0	2.5	2.5	2.6	2.0
35	2.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	2.2	1.0	3.0	2.0	3.0	2.6	2.0
36	2.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	1.7	1.0	3.0	2.5	3.0	2.6	2.0
37	1.0	0.0	1.0	2.0	3.0	2.0	1.0	2.0	2.0	2.4	0.0	3.0	2.5	3.0	2.6	1.0
38	2.0	0.0	1.0	2.0	1.0	0.0	1.0	1.0	2.0	1.7	1.0	3.0	2.5	3.0	3.0	2.0
39	2.0	0.0	1.0	2.0	0.0	0.0	1.0	1.0	1.0	1.5	1.0	3.0	2.5	3.0	3.0	1.0
40	2.0	0.0	1.0	2.0	0.0	0.0	1.0	1.0	1.0	1.1	1.0	3.0	1.0	3.0	2.6	2.0
41	2.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	1.0	1.4	0.0	3.0	2.5	3.0	2.6	2.0
42	1.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	1.0	1.1	0.0	3.0	2.5	2.5	2.6	1.0
43	2.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	2.0	1.4	1.0	3.0	2.5	3.0	2.6	2.0
44	2.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	2.0	1.2	0.0	3.0	2.5	3.0	2.6	1.0
45	1.0	0.0	1.0	2.0	1.0	0.0	1.0	1.0	1.0	0.8	0.0	3.0	2.5	3.0	3.0	1.0
46	1.0	0.0	1.0	2.0	2.0	2.0	1.0	1.0	2.0	1.7	0.0	3.0	2.5	3.0	2.6	2.0
47	1.0	0.0	1.0	2.0	2.0	0.0	1.0	1.0	1.0	1.7	0.0	3.0	2.5	3.0	2.6	1.0
48	1.0	0.0	1.0	2.0	2.0	0.0	1.0	1.0	1.0	1.7	0.0	3.0	2.0	3.0	2.6	1.0
49	1.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	1.0	2.0	0.0	3.0	2.0	3.0	2.6	2.0
50	1.0	0.0	1.0	2.0	1.0	0.0	1.0	2.0	1.0	2.1	0.0	3.0	2.0	3.0	2.6	1.0
51	1.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	1.8	0.0	3.0	2.0	3.0	2.6	0.0
52	1.0	0.0	1.0	2.0	2.0	0.0	1.0	2.0	2.0	2.5	0.0	3.0	2.5	2.5	2.6	1.0
53	1.0	0.0	1.0	0.0	1.0	2.0	1.0	1.0	1.0	1.4	0.0	3.0	2.0	3.0	2.6	1.0
54	1.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	1.0	1.4	0.0	3.0	2.0	3.0	2.6	1.0
55	1.0	0.0	1.0	0.0	3.0	2.0	1.0	3.0	3.0	2.8	0.0	3.0	2.5	3.0	3.0	2.0
56	2.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.8	1.0	3.0	2.5	3.0	3.0	2.0
57	0.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.8	0.0	3.0	2.5	3.0	3.0	1.0
58	2.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	3.0	2.1	1.0	3.0	2.5	3.0	3.0	3.0
59	2.0	0.0	1.0	0.0	1.0	0.0	1.0	3.0	3.0	2.8	1.0	3.0	2.5	3.0	3.0	0.0
60	2.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	3.0	2.4	1.0	3.0	2.0	3.0	3.0	0.0
61	1.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	2.0	2.1	0.0	3.0	2.0	3.0	2.6	3.0
62	2.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	2.0	2.0	1.0	3.0	2.5	3.0	3.0	2.0

```
     PRO    2    3    6   10   12   13   15   17   18   19   20   21   22   23   24   25
OBJ
NO.
 63       2.0  0.0  1.0  0.0  1.0  0.0  1.0  3.0  2.0  2.0  0.0  3.0  2.5  3.0  3.0  2.0
 64       1.0  0.0  1.0  0.0  1.0  0.0  1.0  3.0  2.0  1.5  0.0  3.0  2.0  3.0  3.0  1.0
 65       2.0  0.0  1.0  0.0  2.0  0.0  1.0  3.0  3.0  2.8  1.0  3.0  2.0  3.0  2.6  0.0
 66       2.0  0.0  1.0  0.0  2.0  2.0  1.0  2.0  3.0  2.2  1.0  3.0  2.0  3.0  3.0  2.0
 67       2.0  0.0  1.0  0.0  1.0  0.0  1.0  2.0  2.0  1.8  1.0  3.0  2.5  3.0  3.0  2.0
 68       1.0  0.0  1.0  0.0  1.0  0.0  1.0  2.0  3.0  1.5  1.0  3.0  2.0  3.0  2.6  0.0
 69       1.0  0.0  1.0  0.0  1.0  0.0  1.0  2.0  3.0  1.8  0.0  3.0  2.0  3.0  3.0  1.0
 70       1.0  0.0  1.0  0.0  3.0  0.0  1.0  3.0  3.0  2.8  0.0  3.0  2.5  3.0  3.0  1.0
 71       2.0  0.0  1.0  0.0  2.0  0.0  1.0  2.0  3.0  1.8  0.0  3.0  2.0  3.0  3.0  1.0
 72       1.0  0.0  1.0  0.0  2.0  2.0  1.0  1.0  1.0  0.7  0.0  3.0  2.0  2.5  1.6  1.0
 73       1.0  0.0  1.0  0.0  2.0  0.0  1.0  1.0  1.0  0.7  0.0  3.0  2.0  2.5  2.6  1.0
 74       2.0  0.0  1.0  0.0  3.0  2.0  1.0  3.0  2.0  2.2  1.0  3.0  2.0  3.0  3.0  2.0
 75       2.0  0.0  1.0  0.0  3.0  0.0  1.0  3.0  2.0  2.7  0.0  3.0  2.0  3.0  2.6  0.0
 76       1.0  0.0  1.0  0.0  3.0  0.0  1.0  3.0  2.0  2.7  0.0  3.0  2.0  3.0  2.6  0.0
 77       2.0  0.0  1.0  0.0  2.0  0.0  1.0  2.0  3.0  2.4  1.0  3.0  2.0  3.0  2.6  0.0
 78       2.0  0.0  1.0  0.0  2.0  2.0  1.0  3.0  2.0  2.7  1.0  3.0  2.5  3.0  2.6  1.0
 79       2.0  0.0  1.0  0.0  2.0  0.0  1.0  3.0  2.0  2.4  0.0  3.0  2.0  3.0  2.6  1.0
 80       1.0  0.0  1.0  0.0  1.0  0.0  1.0  3.0  1.0  2.5  0.0  2.6  2.0  3.0  3.0  0.0
 81       2.0  0.0  1.0  0.0  2.0  0.0  1.0  3.0  3.0  2.8  1.0  3.0  2.0  3.0  3.0  1.0
 82       2.0  0.0  1.0  0.0  2.0  0.0  1.0  3.0  3.0  2.4  1.0  3.0  2.0  3.0  2.3  1.0
 83       1.0  0.0  1.0  0.0  3.0  0.0  1.0  3.0  3.0  2.8  1.0  2.3  2.0  3.0  2.6  0.0
 84       0.0  0.0  1.0  0.0  3.0  2.0  1.0  2.0  3.0  2.8  0.0  3.0  2.0  3.0  2.6  1.0
 85       1.0  0.0  1.0  0.0  2.0  0.0  1.0  1.0  3.0  2.5  0.0  3.0  2.0  3.0  2.6  0.0
 86       2.0  0.0  1.0  0.0  2.0  0.0  1.0  1.0  3.0  2.8  0.0  3.0  2.0  3.0  3.0  0.0
 87       2.0  0.0  1.0  0.0  1.0  2.0  1.0  1.0  2.0  1.8  1.0  3.0  2.0  3.0  3.0  1.0
 88       2.0  0.0  1.0  0.0  1.0  0.0  1.0  1.0  2.0  1.8  1.0  3.0  2.0  3.0  3.0  1.0
 90       2.0  0.0  1.0  0.0  1.0  0.0  1.0  1.0  2.0  1.8  1.0  3.0  2.0  3.0  2.6  1.0
 91       2.0  0.0  1.0  0.0  1.0  0.0  1.0  1.0  2.0  1.8  1.0  3.0  2.0  3.0  2.6  1.0
 92       1.0  0.0  1.0  0.0  0.0  0.0  1.0  1.0  1.0  1.5  1.0  3.0  2.0  3.0  2.6  1.0
 93       1.0  0.0  1.0  0.0  0.0  0.0  1.0  1.0  1.0  1.5  1.0  3.0  2.0  3.0  2.6  1.0
 94       1.0  0.0  1.0  0.0  0.0  0.0  1.0  1.0  1.0  1.5  1.0  3.0  2.0  3.0  2.6  1.0
 95       2.0  0.0  1.0  0.0  0.0  0.0  1.0  1.0  1.0  1.7  1.0  3.0  2.0  3.0  3.0  0.0
 96       2.0  0.0  1.0  0.0  2.0  0.0  2.0  3.0  2.0  2.7  1.0  3.0  2.5  3.0  2.6  1.0
 97       2.0  0.0  1.0  0.0  2.0  3.0  2.0  3.0  2.0  2.5  1.0  2.6  2.0  2.5  2.6  1.0
 98       3.0  0.0  1.0  0.0  2.0  0.0  2.0  3.0  3.0  2.8  2.0  2.6  2.5  3.0  2.6  2.0
```

OBJ NO. \ PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
99	2.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	2.0	2.8	1.0	2.6	2.0	2.5	2.6	1.0
100	1.0	0.0	1.0	0.0	1.0	0.0	2.0	3.0	1.0	2.5	0.0	1.6	2.0	2.5	2.6	0.0
101	2.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	2.0	2.7	0.0	2.6	2.0	2.5	2.6	1.0
102	1.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.7	0.0	2.6	2.0	3.0	2.6	0.0
103	1.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.8	0.0	2.6	2.0	3.0	2.6	0.0
104	3.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.8	2.0	2.6	2.0	3.0	3.0	1.0
105	3.0	0.0	1.0	0.0	2.0	3.0	2.0	2.0	3.0	2.7	2.0	3.0	2.5	3.0	3.0	1.0
106	2.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	3.0	2.5	1.0	3.0	2.5	3.0	3.0	1.0
107	3.0	0.0	1.0	0.0	3.0	0.0	2.0	2.0	3.0	2.7	2.0	3.0	2.5	2.5	3.0	1.0
108	2.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	2.7	1.0	3.0	2.0	3.0	3.0	1.0
109	3.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	2.5	2.0	3.0	2.5	3.0	3.0	0.0
110	3.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.7	2.0	3.0	2.0	3.0	3.0	2.0
111	3.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.2	2.0	3.0	2.0	3.0	3.0	2.0
112	3.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	2.2	2.0	3.0	2.0	2.5	3.0	1.0
113	2.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	2.2	1.0	3.0	2.0	2.5	3.0	2.0
114	2.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	2.2	1.0	3.0	2.0	2.5	3.0	2.0
115	2.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.8	1.0	3.0	2.5	2.5	2.6	1.0
116	3.0	0.0	1.0	0.0	1.0	0.0	2.0	3.0	3.0	2.5	2.0	3.0	2.0	3.0	3.0	2.0
117	3.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.5	3.0	3.0	2.0	3.0	3.0	1.0
118	3.0	0.0	1.0	0.0	1.0	0.0	2.0	3.0	3.0	2.5	3.0	3.0	2.0	2.0	3.0	2.0
119	3.0	0.0	1.0	0.0	2.0	3.0	1.0	3.0	2.0	2.8	1.0	3.0	2.5	3.0	3.0	1.0
120	1.0	0.0	1.0	0.0	1.0	0.0	1.0	3.0	2.0	2.8	1.0	3.0	2.5	3.0	3.0	1.0
121	2.0	0.0	1.0	0.0	1.0	0.0	1.0	3.0	3.0	2.8	0.0	3.0	2.5	3.0	3.0	1.0
122	1.0	0.0	3.0	0.0	2.0	3.0	1.0	3.0	3.0	2.8	0.0	2.6	2.0	3.0	2.6	1.0
123	3.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	2.0	3.0	3.0	2.5	3.0	2.6	2.0
124	1.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	1.5	1.0	3.0	2.5	2.5	2.6	2.0
125	1.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	1.8	1.0	3.0	2.0	3.0	2.6	2.0
126	2.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	1.8	1.0	3.0	2.0	3.0	2.6	2.0
127	2.0	0.0	3.0	0.0	1.0	0.0	2.0	1.0	0.0	1.8	1.0	3.0	2.0	3.0	2.6	2.0
128	3.0	0.0	3.0	0.0	2.0	0.0	3.0	2.0	0.0	2.1	2.0	3.0	2.5	3.0	3.0	3.0
129	2.0	0.0	3.0	0.0	1.0	0.0	3.0	1.0	0.0	2.2	2.0	3.0	2.5	3.0	3.0	2.0
130	2.0	0.0	2.0	0.0	1.0	0.0	2.0	1.0	0.0	1.4	1.0	3.0	2.0	3.0	2.6	2.0
131	3.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	2.0	1.0	3.0	2.0	2.5	2.3	3.0
132	1.0	0.0	2.0	0.0	1.0	0.0	2.0	1.0	0.0	2.0	1.0	2.6	2.0	2.5	3.0	3.0
133	3.0	0.0	3.0	0.0	2.0	3.0	3.0	3.0	0.0	1.5	3.0	3.0	2.5	2.0	2.6	3.0

PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
OBJ NO.																
134	3.0	0.0	3.0	0.0	2.0	0.0	3.0	3.0	0.0	2.4	3.0	3.0	2.5	3.0	3.0	2.0
135	3.0	0.0	3.0	0.0	2.0	0.0	3.0	3.0	0.0	1.4	3.0	3.0	3.0	3.0	3.0	3.0
136	3.0	0.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	1.8	3.0	3.0	2.5	3.0	2.6	3.0
137	3.0	0.0	3.0	0.0	2.0	0.0	3.0	3.0	0.0	1.4	3.0	2.6	3.0	2.0	2.3	1.0
138	3.0	0.0	3.0	0.0	2.0	0.0	3.0	3.0	0.0	1.2	2.0	3.0	2.5	3.0	2.6	2.0
139	3.0	0.0	3.0	0.0	2.0	3.0	2.0	3.0	0.0	2.2	2.0	3.0	2.0	3.0	2.6	3.0
140	3.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	1.5	1.0	2.6	2.0	3.0	3.0	2.0
141	2.0	0.0	3.0	0.0	2.0	0.0	2.0	1.0	0.0	1.4	2.0	2.3	2.0	2.5	3.0	2.0
142	3.0	0.0	1.0	0.0	1.0	3.0	1.0	3.0	0.0	1.4	3.0	3.0	3.0	3.0	2.3	2.0
143	2.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.5	1.0	1.6	2.0	2.0	2.6	1.0
144	2.0	0.0	1.0	0.0	2.0	0.0	1.0	0.0	0.0	0.5	1.0	2.3	2.0	2.0	2.3	1.0
145	2.0	0.0	1.0	0.0	2.0	0.0	1.0	0.0	0.0	0.4	1.0	1.6	2.0	2.0	2.3	1.0
146	2.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.4	1.0	1.3	1.5	2.0	2.3	1.0
147	2.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	0.0	0.4	1.0	1.6	1.5	2.0	2.0	1.0
148	0.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	0.4	1.0	1.3	1.5	2.0	2.6	1.0
149	2.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.4	1.0	1.0	1.5	2.0	2.0	1.0
150	1.0	0.0	1.0	0.0	3.0	0.0	1.0	0.0	0.0	0.4	1.0	1.6	2.0	2.5	1.6	0.0
151	1.0	0.0	1.0	0.0	3.0	0.0	1.0	0.0	0.0	0.4	1.0	1.0	1.5	2.5	1.3	0.0
152	3.0	0.0	1.0	0.0	2.0	0.0	1.0	1.0	0.0	0.4	2.0	2.0	1.5	2.0	2.3	1.0
153	3.0	0.0	1.0	0.0	0.0	2.0	1.0	1.0	0.0	1.0	3.0	3.0	3.0	3.0	2.3	1.0
154	3.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.0	0.8	3.0	3.0	2.5	3.0	2.6	1.0
155	3.0	0.0	1.0	0.0	0.0	0.0	1.0	1.0	0.0	1.1	3.0	3.0	3.0	3.0	2.6	0.0
156	3.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.2	3.0	3.0	2.5	3.0	2.6	1.0
157	3.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	3.0	2.5	3.0	3.0	1.0
158	3.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.1	3.0	3.0	3.0	3.0	3.0	1.0
159	3.0	0.0	1.0	0.0	2.0	2.0	1.0	1.0	1.0	0.5	3.0	3.0	3.0	3.0	3.0	1.0
160	3.0	0.0	1.0	0.0	3.0	1.0	1.0	3.0	3.0	2.1	3.0	3.0	3.0	3.0	2.6	2.0
161	3.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.1	3.0	3.0	2.5	3.0	3.0	2.0
162	3.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.1	3.0	3.0	2.5	3.0	3.0	2.0
163	3.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.0	3.0	3.0	2.5	3.0	3.0	2.0

OBJ NO.	PRO 2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
165	3.0	0.0	1.0	0.0	3.0	3.0	1.0	1.0	2.0	0.5	2.0	3.0	2.5	3.0	2.6	0.0
166	2.0	0.0	1.0	0.0	3.0	0.0	1.0	1.0	2.0	0.8	1.0	3.0	2.5	3.0	2.6	0.0
168	3.0	0.0	1.0	0.0	3.0	0.0	1.0	1.0	3.0	1.1	3.0	3.0	2.5	3.0	2.3	0.0
169	2.0	0.0	2.0	0.0	3.0	3.0	1.0	1.0	2.0	1.2	1.0	2.6	2.5	3.0	2.6	1.0
171	3.0	0.0	2.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	3.0	3.0	3.0	2.0	2.6	1.0
172	3.0	0.0	2.0	0.0	2.0	0.0	2.0	3.0	2.0	1.5	3.0	3.0	2.5	3.0	2.6	2.0
173	2.0	0.0	2.0	0.0	1.0	0.0	2.0	1.0	3.0	2.1	1.0	2.3	2.0	3.0	3.0	1.0
174	3.0	0.0	2.0	0.0	0.0	0.0	2.0	3.0	3.0	2.4	2.0	2.3	2.0	2.0	2.6	1.0
175	3.0	0.0	1.0	0.0	0.0	0.0	2.0	3.0	3.0	2.1	3.0	3.0	2.5	3.0	3.0	2.0
176	3.0	0.0	1.0	0.0	3.0	0.0	2.0	3.0	3.0	2.2	3.0	3.0	2.0	3.0	3.0	1.0
177	0.0	0.0	1.0	0.0	1.0	3.0	2.0	1.0	0.0	1.2	0.0	3.0	3.0	3.0	3.0	1.0
178	0.0	0.0	1.0	0.0	1.0	0.0	2.0	1.0	0.0	0.8	0.0	3.0	3.0	3.0	3.0	1.0
179	3.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	3.0	1.1	3.0	3.0	3.0	3.0	2.6	1.0
180	2.0	0.0	3.0	0.0	2.0	2.0	2.0	1.0	0.0	1.2	1.0	3.0	3.0	3.0	2.6	1.0
181	3.0	0.0	2.0	0.0	3.0	2.0	2.0	3.0	0.0	2.5	1.0	3.0	3.0	3.0	2.6	1.0
182	0.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.1	0.0	1.0	3.0	2.0	2.0	1.0
183	1.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.7	1.0	2.6	3.0	3.0	2.6	1.0
184	1.0	0.0	1.0	0.0	3.0	0.0	1.0	3.0	3.0	2.7	1.0	2.6	3.0	3.0	2.6	1.0
185	3.0	0.0	1.0	0.0	2.0	2.0	2.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	2.6	2.0
186	3.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	3.0	2.4	3.0	3.0	2.5	3.0	2.6	2.0
187	3.0	0.0	1.0	0.0	1.0	3.0	1.0	1.0	3.0	1.4	3.0	3.0	3.0	3.0	3.0	1.0
188	3.0	0.0	1.0	0.0	1.0	0.0	1.0	1.0	3.0	1.4	3.0	3.0	3.0	3.0	3.0	1.0
189	3.0	0.0	1.0	0.0	2.0	0.0	1.0	1.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	1.0
190	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	3.0	2.2	3.0	3.0	3.0	3.0	3.0	2.0
191	1.0	0.0	2.0	0.0	2.0	1.0	1.0	1.0	3.0	0.8	0.0	3.0	3.0	3.0	2.6	2.0
192	1.0	0.0	2.0	0.0	2.0	0.0	2.0	1.0	3.0	0.7	0.0	3.0	3.0	3.0	2.6	2.0
193	3.0	0.0	2.0	0.0	1.0	0.0	2.0	3.0	3.0	1.5	1.0	3.0	2.5	3.0	3.0	1.0
194	3.0	0.0	2.0	0.0	1.0	0.0	2.0	3.0	3.0	1.4	2.0	3.0	3.0	2.5	3.0	1.0
195	3.0	0.0	1.0	0.0	2.0	3.0	1.0	3.0	3.0	2.2	3.0	3.0	3.0	3.0	2.6	1.0
196	3.0	0.0	1.0	0.0	3.0	0.0	2.0	3.0	3.0	2.1	3.0	3.0	2.5	3.0	3.0	1.0
197	3.0	0.0	1.0	0.0	2.0	0.0	2.0	3.0	3.0	2.2	3.0	3.0	2.5	3.0	2.6	1.0

PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
OBJ NO.																
198	2.0	0.0	1.0	0.0	1.0	0.0	2.0	3.0	2.0	2.0	2.0	3.0	2.5	2.0	2.6	2.0
199	3.0	0.0	2.0	0.0	1.0	2.0	2.0	2.0	2.0	1.7	2.0	3.0	2.5	2.5	2.3	1.0
200	3.0	0.0	2.0	0.0	2.0	0.0	2.0	2.0	3.0	1.5	3.0	3.0	3.0	3.0	3.0	2.0
201	3.0	0.0	1.0	0.0	1.0	3.0	2.0	2.0	2.0	1.2	3.0	3.0	2.5	2.5	2.6	2.0
202	3.0	0.0	2.0	0.0	1.0	2.0	1.0	2.0	2.0	1.4	3.0	3.0	3.0	3.0	2.6	2.0
203	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.8	3.0	3.0	3.0	3.0	3.0	2.0
204	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.8	3.0	3.0	3.0	3.0	2.6	2.0
205	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.2	3.0	3.0	3.0	3.0	3.0	1.0
206	2.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.4	2.0	3.0	2.0	3.0	3.0	2.0
207	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.7	3.0	3.0	2.0	1.5	3.0	2.0
208	3.0	0.0	1.0	0.0	0.0	2.0	1.0	2.0	2.0	1.5	3.0	3.0	2.5	3.0	2.6	2.0
209	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.4	2.0	3.0	2.5	3.0	2.6	2.0
210	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.4	2.0	3.0	2.5	3.0	2.6	2.0
211	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	3.0	1.8	2.0	3.0	2.5	3.0	2.6	2.0
212	3.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	2.0	1.7	2.0	3.0	2.5	3.0	3.0	2.0
213	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.4	2.0	3.0	2.5	3.0	2.6	2.0
214	3.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	3.0	1.5	3.0	3.0	3.0	3.0	2.6	2.0
215	2.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	3.0	1.1	1.0	3.0	2.5	3.0	2.6	2.0
216	1.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.4	1.0	2.3	2.5	3.0	3.0	2.0
217	3.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	2.0	1.7	3.0	3.0	3.0	3.0	2.6	2.0
218	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	3.0	2.0
219	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.2	2.0	3.0	3.0	2.5	3.0	2.0
220	2.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.2	1.0	3.0	2.5	2.5	3.0	2.0
221	2.0	0.0	2.0	0.0	1.0	2.0	1.0	3.0	2.0	1.7	1.0	3.0	2.5	2.5	3.0	2.0
222	2.0	0.0	2.0	0.0	1.0	2.0	1.0	2.0	1.0	1.1	1.0	3.0	2.5	2.5	3.0	1.0
223	2.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.2	2.0	3.0	2.5	2.5	3.0	2.0
224	3.0	0.0	2.0	0.0	1.0	3.0	1.0	3.0	1.0	2.1	3.0	3.0	2.5	2.5	3.0	1.0
225	3.0	0.0	2.0	0.0	1.0	0.0	1.0	3.0	1.0	1.8	3.0	3.0	2.5	2.5	3.0	1.0

PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
OBJ NO.																
226	2.0	0.0	2.0	0.0	1.0	0.0	1.0	3.0	3.0	2.1	1.0	3.0	2.5	3.0	3.0	2.0
227	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	2.0	3.0	3.0	2.5	3.0	3.0	2.0
228	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	2.0	3.0	3.0	2.5	2.5	3.0	2.0
229	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.7	3.0	3.0	2.5	3.0	3.0	2.0
230	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.8	3.0	3.0	2.5	3.0	3.0	2.0
231	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	3.0	1.7	3.0	3.0	2.5	3.0	3.0	2.0
232	2.0	0.0	2.0	0.0	1.0	2.0	1.0	2.0	2.0	1.5	1.0	3.0	2.5	3.0	2.6	2.0
233	2.0	0.0	2.0	0.0	2.0	0.0	1.0	2.0	2.0	1.5	1.0	3.0	2.5	2.5	3.0	2.0
234	2.0	0.0	2.0	0.0	1.0	3.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	2.6	2.0
235	2.0	0.0	2.0	0.0	1.0	3.0	1.0	2.0	0.0	1.2	1.0	2.6	2.5	2.5	2.6	2.0
236	2.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	0.0	1.5	2.0	3.0	2.5	2.5	2.6	1.0
237	2.0	0.0	1.0	0.0	2.0	0.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	3.0	2.0
238	2.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.7	1.0	3.0	2.5	3.0	3.0	2.0
239	3.0	0.0	1.0	0.0	2.0	2.0	1.0	2.0	2.0	1.8	2.0	3.0	2.5	3.0	3.0	1.0
240	2.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.8	1.0	2.6	2.5	3.0	3.0	2.0
241	2.0	0.0	2.0	0.0	2.0	0.0	1.0	2.0	2.0	1.8	0.0	3.0	2.5	2.5	3.0	2.0
242	3.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	2.0	1.5	3.0	3.0	2.5	3.0	3.0	2.0
243	3.0	0.0	2.0	0.0	0.0	0.0	1.0	2.0	2.0	1.4	3.0	2.6	2.5	2.5	3.0	2.0
244	3.0	0.0	2.0	0.0	0.0	0.0	1.0	2.0	2.0	1.2	3.0	3.0	2.5	2.5	2.6	2.0
245	3.0	0.0	2.0	0.0	1.0	3.0	1.0	2.0	2.0	1.2	3.0	3.0	2.5	3.0	3.0	1.0
246	3.0	0.0	2.0	0.0	0.0	0.0	1.0	2.0	2.0	1.2	3.0	3.0	2.5	3.0	3.0	1.0
247	3.0	0.0	2.0	0.0	1.0	3.0	1.0	2.0	2.0	1.7	3.0	3.0	3.0	3.0	2.6	1.0
248	2.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	2.0	1.7	1.0	2.3	2.0	3.0	2.6	1.0
249	2.0	0.0	2.0	0.0	1.0	0.0	1.0	2.0	2.0	1.5	1.0	3.0	2.0	3.0	2.6	1.0
250	1.0	0.0	1.0	0.0	1.0	2.0	1.0	2.0	1.0	1.0	1.0	2.6	2.0	2.5	3.0	1.0
251	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.2	3.0	3.0	2.5	3.0	3.0	2.0
252	2.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.0	1.0	2.6	2.0	3.0	3.0	2.0
253	3.0	0.0	1.0	0.0	1.0	3.0	2.0	2.0	2.0	1.8	2.0	3.0	2.0	3.0	3.0	2.0
254	3.0	0.0	2.0	0.0	1.0	0.0	2.0	2.0	2.0	1.7	3.0	3.0	2.0	3.0	3.0	2.0
255	2.0	0.0	1.0	0.0	1.0	0.0	2.0	2.0	2.0	1.1	1.0	3.0	2.0	2.5	3.0	2.0
256	1.0	0.0	2.0	0.0	1.0	0.0	2.0	2.0	2.0	1.5	1.0	2.6	2.0	2.5	3.0	1.0
257	1.0	0.0	2.0	0.0	1.0	0.0	2.0	2.0	2.0	1.5	1.0	2.6	2.0	2.5	3.0	1.0
258	1.0	0.0	0.0	0.0	1.0	0.0	2.0	2.0	2.0	0.7	1.0	2.6	2.0	2.5	3.0	1.0
259	3.0	0.0	1.0	0.0	1.0	0.0	2.0	2.0	2.0	2.2	3.0	3.0	2.5	3.0	3.0	2.0

PRO	2	3	6	10	12	13	15	17	18	19	20	21	22	23	24	25
OBJ NO.																
260	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	2.2	3.0	3.0	2.5	3.0	3.0	2.0
261	2.0	0.0	1.0	0.0	2.0	3.0	0.0	2.0	2.0	1.8	1.0	3.0	2.5	2.5	3.0	1.0
262	1.0	0.0	1.0	0.0	2.0	0.0	2.0	2.0	2.0	1.8	1.0	3.0	2.5	2.5	3.0	1.0
263	3.0	0.0	1.0	0.0	1.0	3.0	1.0	2.0	1.0	1.1	2.0	3.0	2.5	2.5	2.6	1.0
264	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	2.0	3.0	2.5	2.5	2.0	2.0
265	2.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.1	1.0	3.0	2.5	2.5	3.0	2.0
266	2.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	1.0	1.1	1.0	3.0	2.5	2.5	2.6	1.0
267	1.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.1	2.0	3.0	2.5	2.5	3.0	2.0
268	3.0	0.0	1.0	0.0	0.0	3.0	1.0	2.0	2.0	1.4	3.0	3.0	2.5	2.5	3.0	2.0
269	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	3.0	1.2	3.0	3.0	2.5	3.0	3.0	2.0
270	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	3.0	1.1	3.0	3.0	2.0	2.5	3.0	2.0
271	3.0	0.0	1.0	0.0	0.0	0.0	1.0	2.0	2.0	1.2	3.0	3.0	2.5	3.0	3.0	2.0
272	3.0	0.0	1.0	0.0	1.0	3.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	2.6	2.0
273	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	3.0	2.0
274	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	3.0	3.0	2.0	2.5	3.0	2.0
275	3.0	0.0	1.0	0.0	1.0	3.0	1.0	2.0	2.0	1.1	3.0	3.0	2.0	2.5	3.0	2.0
276	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.2	2.0	3.0	2.5	2.5	3.0	2.0
277	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	3.0	3.0	2.5	3.0	3.0	2.0
278	3.0	0.0	1.0	0.0	0.0	3.0	1.0	2.0	0.0	1.1	3.0	3.0	2.5	3.0	2.6	2.0
279	2.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	1.0	2.2	1.0	3.0	2.5	2.5	2.6	1.0
280	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	0.0	2.4	3.0	3.0	2.5	3.0	3.0	2.0
281	3.0	0.0	1.0	0.0	1.0	3.0	1.0	2.0	2.0	1.1	3.0	3.0	2.5	3.0	3.0	2.0
282	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	3.0	3.0	2.5	3.0	3.0	2.0
283	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	2.0	3.0	2.5	3.0	3.0	2.0
284	3.0	0.0	1.0	0.0	1.0	0.0	1.0	2.0	2.0	1.1	2.0	3.0	2.5	3.0	3.0	2.0
285	3.0	0.0	1.0	0.0	2.0	3.0	1.0	3.0	2.0	1.4	3.0	3.0	2.5	3.0	2.6	1.0
286	3.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	2.0	1.4	3.0	3.0	2.5	3.0	2.6	2.0
287	3.0	0.0	1.0	0.0	2.0	0.0	1.0	3.0	2.0	1.8	3.0	3.0	2.5	3.0	3.0	2.0
288	3.0	0.0	2.0	0.0	2.0	3.0	1.0	3.0	2.0	1.2	2.0	3.0	2.5	2.5	2.6	1.0
289	3.0	0.0	2.0	0.0	2.0	0.0	1.0	3.0	2.0	1.0	3.0	3.0	2.5	2.5	3.0	1.0

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

PRIMARY CORE CURRICULUM

OBJ NO. \ PRO	26	27	28	29	30	31	32	MEAN* PROGRAM VALUE
1	1.0	2.0	1.0	1.2	2.0	1.6	1.0	1.8
2	3.0	2.0	1.0	1.2	2.5	2.3	1.0	2.0
3	2.0	1.0	1.0	1.0	1.5	1.3	1.0	1.4
4	2.0	1.5	1.0	1.6	2.0	1.6	1.0	1.8
5	2.0	1.5	1.0	1.6	1.0	1.3	0.5	1.6
6	3.0	2.0	1.0	1.4	2.0	1.6	1.0	2.0
7	2.0	2.0	3.0	1.4	2.0	1.6	1.0	1.9
8	1.0	1.5	3.0	1.6	2.0	2.0	1.0	1.9
9	3.0	1.5	2.0	2.0	2.5	2.0	2.0	1.9
10	3.0	1.5	2.0	1.4	3.0	2.6	2.5	2.1
11	3.0	2.0	2.0	2.4	3.0	2.3	3.0	2.2
12	1.0	1.5	1.0	2.0	2.5	1.6	1.5	1.7
13	3.0	1.5	1.0	2.2	3.0	3.0	3.0	2.4
14	2.0	1.5	1.0	2.4	3.0	2.6	2.5	2.2
15	2.0	2.0	3.0	2.2	3.0	3.0	2.0	2.6
16	1.0	2.5	1.0	2.0	2.5	2.6	2.5	2.4
17	3.0	2.5	3.0	2.2	2.5	2.6	2.5	2.5
18	2.0	1.5	2.0	2.0	2.5	2.6	2.0	2.3
19	2.0	2.0	3.0	2.2	2.5	2.6	2.5	2.4
21	3.0	2.0	1.0	2.4	2.5	2.3	2.0	2.4
22	2.0	1.5	1.0	2.4	2.5	2.3	2.0	2.2
23	2.0	1.0	1.0	2.2	2.0	2.3	2.0	2.1
24	2.0	1.0	1.0	2.2	2.0	2.3	1.5	2.0
25	2.0	1.5	1.0	2.6	3.0	1.6	3.0	2.3
26	2.0	1.5	1.0	2.2	3.0	3.0	3.0	2.3
27	2.0	2.0	1.0	2.6	3.0	3.0	2.5	2.4
28	1.0	2.0	1.0	2.8	3.0	3.0	2.5	2.6
29	2.0	2.0	1.0	3.0	3.0	3.0	2.5	2.6

*Mean program values were computed averages of all program types. Program types which appeared to be out-of-line with similar programs or who felt certain core curricular areas were not important were not included in the averages.

OBJ NO. \ PRO	26	27	28	29	30	31	32	MEAN PROGRAM VALUES
30	3.0	2.0	1.0	3.0	3.0	3.0	2.5	2.5
31	3.0	2.5	1.0	3.0	3.0	3.0	2.5	2.4
32	3.0	2.5	1.0	3.0	3.0	3.0	2.5	2.2
33	1.0	1.5	1.0	2.0	1.5	2.0	1.5	1.9
34	2.0	1.5	1.0	2.2	1.5	2.3	2.5	2.1
35	1.0	1.5	1.0	1.8	3.0	3.0	2.0	2.2
36	1.0	2.5	1.0	3.0	2.0	2.6	2.0	2.3
37	1.0	2.5	1.0	2.6	2.0	2.6	2.0	2.4
38	3.0	3.0	1.0	3.0	2.5	3.0	2.0	2.4
39	1.0	3.0	1.0	3.0	2.5	3.0	3.0	2.2
40	2.0	3.0	1.0	3.0	2.0	2.3	2.5	2.0
41	3.0	3.0	1.0	2.8	3.0	3.0	2.5	2.3
42	3.0	3.0	1.0	2.0	2.0	2.3	2.0	1.9
43	3.0	3.0	1.0	2.4	2.0	2.6	2.0	2.2
44	2.0	3.0	1.0	2.2	2.0	2.6	2.0	2.1
45	3.0	3.0	1.0	2.0	2.0	2.3	2.0	1.9
46	3.0	2.5	1.0	2.8	2.5	2.6	3.0	2.3
47	2.0	2.5	1.0	1.8	2.5	2.6	3.0	2.1
48	2.0	2.5	1.0	2.2	2.5	2.6	3.0	2.1
49	2.0	1.0	1.0	2.8	2.5	2.6	3.0	2.2
50	2.0	2.5	1.0	2.6	2.5	2.6	3.0	2.2
51	2.0	2.5	1.0	2.8	2.5	2.6	3.0	2.2
52	1.0	2.0	1.0	2.6	2.5	2.6	3.0	2.4
53	1.0	1.5	1.0	2.2	1.0	1.6	2.0	1.8
54	1.0	1.5	1.0	2.8	1.0	1.6	2.0	1.8
55	3.0	2.5	1.0	2.8	2.5	2.6	3.0	2.6
56	3.0	2.5	1.0	2.4	2.5	2.6	3.0	2.5
57	2.0	2.5	1.0	2.2	2.5	2.6	3.0	2.5
58	3.0	2.5	1.0	3.0	3.0	3.0	3.0	2.5
59	2.0	2.0	1.0	2.4	2.5	2.6	3.0	2.4
60	3.0	2.5	1.0	2.8	2.5	2.6	3.0	2.3
61	3.0	2.5	1.0	3.0	2.5	2.6	3.0	2.4
62	3.0	2.5	1.0	3.0	3.0	3.0	3.0	2.4

OBJ NO.	PRO 26	27	28	29	30	31	32	MEAN PROGRAM VALUES
63	3.0	2.5	1.0	3.0	3.0	3.0	3.0	2.4
64	2.0	2.5	1.0	3.0	3.0	3.0	3.0	2.3
65	2.0	2.5	1.0	1.8	2.5	2.6	3.0	2.3
66	3.0	2.5	1.0	3.0	3.0	3.0	3.0	2.5
67	2.0	2.5	1.0	3.0	3.0	3.0	3.0	2.4
68	1.0	2.5	1.0	2.0	3.0	3.0	3.0	2.1
69	1.0	2.5	1.0	2.6	3.0	3.0	3.0	2.3
70	2.0	2.5	1.0	2.2	3.0	3.0	3.0	2.5
71	2.0	2.0	1.0	1.8	3.0	3.0	3.0	2.2
72	1.0	1.0	1.0	2.2	1.0	2.3	1.5	1.6
73	0.0	1.0	1.0	2.2	1.0	1.6	1.5	1.6
74	2.0	2.5	1.0	3.0	1.5	2.3	2.5	2.4
75	1.0	2.5	1.0	1.8	1.5	2.3	2.5	2.2
76	2.0	2.5	1.0	2.4	1.5	2.3	2.0	2.3
77	1.0	2.0	1.0	2.2	2.0	2.6	2.0	2.2
78	2.0	2.0	1.0	2.8	2.0	2.6	2.5	2.4
79	2.0	2.5	0.0	3.0	1.5	2.3	3.0	2.3
80	1.0	2.5	0.0	2.2	1.5	2.3	3.0	2.1
81	3.0	2.5	0.0	3.0	2.0	2.6	3.0	2.5
82	2.0	2.5	1.0	3.0	2.0	2.3	3.0	2.3
83	3.0	2.0	0.0	2.0	2.0	2.3	3.0	2.2
84	2.0	2.5	0.0	2.6	2.0	2.3	3.0	2.3
85	2.0	1.0	0.0	2.8	2.0	2.3	3.0	2.2
86	2.0	2.5	0.0	2.4	2.0	2.3	3.0	2.3
87	2.0	2.5	1.0	2.6	1.5	2.3	2.0	2.1
88	2.0	2.5	1.0	2.6	1.5	2.3	2.0	2.1
90	1.0	2.5	1.0	2.4	1.5	2.3	2.0	2.0
91	1.0	2.5	0.0	2.4	1.5	2.3	2.0	2.0
92	1.0	2.5	0.0	1.4	1.5	2.0	2.0	1.7
93	1.0	2.5	0.0	1.4	1.5	2.0	2.0	1.7
94	2.0	2.0	0.0	1.4	1.5	2.0	2.0	1.7
95	2.0	2.5	0.0	1.2	1.5	2.0	2.0	1.7
96	1.0	2.5	0.0	1.4	2.5	2.3	2.0	2.2
97	2.0	2.5	0.0	1.0	2.5	2.3	2.0	2.1
98	2.0	2.5	0.0	1.4	2.5	2.6	2.0	2.3

OBJ NO.	PRO 26	27	28	29	30	31	32	MEAN PROGRAM VALUES
99	2.0	2.5	0.0	1.2	2.5	2.3	2.0	2.1
100	0.0	0.5	0.0	1.0	2.0	1.6	2.0	1.7
101	2.0	2.5	0.0	1.0	2.5	2.6	2.0	2.1
102	3.0	1.5	0.0	1.0	2.5	2.6	1.5	2.0
103	2.0	2.5	0.0	0.8	2.5	2.6	2.0	2.1
104	3.0	2.0	0.0	0.8	2.5	2.3	2.0	2.1
105	3.0	2.5	1.0	1.6	2.5	2.6	2.5	2.4
106	3.0	2.0	1.0	1.4	2.0	2.3	2.5	2.2
107	3.0	2.0	1.0	1.6	2.5	2.6	2.5	2.3
108	2.0	2.0	1.0	1.8	2.5	2.6	2.5	2.2
109	3.0	2.0	1.0	1.8	2.5	2.6	2.5	2.2
110	2.0	2.5	1.0	1.8	3.0	3.0	3.0	2.4
111	2.0	2.0	0.0	2.2	3.0	3.0	3.0	2.3
112	3.0	2.0	1.0	2.0	3.0	3.0	2.5	2.2
113	3.0	1.5	1.0	1.8	2.5	2.3	3.0	2.1
114	3.0	1.5	1.0	1.8	2.5	2.3	3.0	2.1
115	3.0	2.0	1.0	1.6	2.5	2.6	3.0	2.3
116	2.0	1.5	1.0	2.2	3.0	3.0	3.0	2.4
117	3.0	2.0	1.0	2.2	3.0	3.0	3.0	2.4
118	2.0	2.0	1.0	2.0	2.5	2.6	3.0	2.2
119	3.0	2.5	1.0	1.8	2.0	2.6	2.5	2.4
120	3.0	1.5	0.0	1.6	2.5	2.6	2.5	2.2
121	3.0	1.5	0.0	1.4	2.5	2.6	2.5	2.2
122	3.0	2.0	0.0	1.6	2.5	2.6	3.0	2.3
123	3.0	2.5	3.0	2.0	2.5	2.6	2.0	2.2
124	2.0	2.5	0.0	1.8	2.5	2.6	2.0	1.9
125	1.0	2.0	3.0	2.0	2.5	2.6	2.5	2.1
126	1.0	2.0	3.0	2.0	2.5	2.6	2.5	2.1
127	1.0	2.0	3.0	2.0	2.5	2.6	2.5	2.0
128	2.0	2.5	3.0	2.8	2.5	2.6	2.0	2.4
129	2.0	2.0	3.0	2.2	2.5	2.6	2.0	2.2
130	2.0	2.5	3.0	1.4	2.0	2.3	2.0	1.9
131	1.0	2.5	3.0	2.0	2.0	2.3	2.0	2.0
132	1.0	2.5	3.0	2.4	2.0	2.3	2.0	2.1
133	2.0	2.5	3.0	2.8	3.0	3.0	2.0	2.4

OBJ NO.	PRO 26	27	28	29	30	31	32	MEAN PROGRAM VALUES
134	3.0	2.5	3.0	2.6	3.0	3.0	2.0	2.5
135	2.0	2.5	3.0	2.2	2.5	2.6	1.5	2.2
136	3.0	2.5	3.0	2.8	2.5	2.6	1.5	2.4
137	1.0	2.5	3.0	2.8	2.0	2.3	2.0	2.0
138	3.0	2.5	3.0	2.4	2.5	2.6	1.5	2.1
139	2.0	2.5	3.0	2.8	2.5	2.6	2.5	2.5
140	2.0	2.5	3.0	2.0	2.5	2.3	2.0	2.0
141	1.0	2.5	3.0	1.6	2.0	2.0	2.0	1.8
142	2.0	2.0	3.0	2.0	2.0	1.6	1.5	2.0
143	1.0	1.0	1.0	0.4	1.0	1.3	1.0	1.1
144	1.0	1.0	1.0	0.6	1.0	1.3	1.0	1.1
145	2.0	1.5	1.0	0.6	1.0	1.3	1.0	1.1
146	2.0	1.0	1.0	0.4	1.0	1.0	1.0	0.9
147	1.0	1.0	1.0	0.6	1.0	1.0	1.0	0.9
148	1.0	1.0	1.0	0.6	1.0	1.0	1.0	1.0
149	1.0	1.0	1.0	0.4	0.5	1.0	1.5	0.8
150	0.0	1.0	1.0	0.4	1.0	1.0	1.0	1.0
151	1.0	1.0	1.0	0.4	1.0	1.0	1.0	0.9
152	2.0	1.0	1.0	0.8	1.0	1.0	1.5	1.1
153	2.0	3.0	1.0	2.6	2.5	2.6	2.0	2.0
154	2.0	3.0	1.0	2.8	2.5	2.6	2.5	1.9
155	1.0	2.5	1.0	2.4	2.5	2.6	1.5	1.9
156	1.0	3.0	1.0	2.8	3.0	2.6	1.5	2.1
157	1.0	3.0	1.0	3.0	3.0	2.6	1.5	2.1
158	1.0	3.0	1.0	3.0	3.0	2.6	1.5	2.2
159	3.0	3.0	1.0	2.6	3.0	2.6	1.5	2.1
160	3.0	2.5	1.0	2.6	3.0	3.0	1.5	2.5
161	2.0	2.0	1.0	2.2	3.0	3.0	1.5	2.4
162	1.0	2.0	1.0	2.4	3.0	3.0	1.5	2.4
163	3.0	2.0	1.0	2.6	3.0	3.0	1.5	2.4

OBJ NO. / PRO	26	27	28	29	30	31	32	MEAN PROGRAM VALUES
165	2.0	1.5	1.0	0.6	0.5	1.0	1.0	1.4
166	1.0	1.5	1.0	0.6	0.5	1.0	1.0	1.4
168	1.0	1.5	1.0	1.0	1.5	1.0	1.5	1.5
169	1.0	2.0	0.0	0.6	1.0	1.0	1.0	1.6
171	2.0	1.5	0.0	1.2	0.5	1.0	1.0	1.4
172	2.0	2.0	0.0	2.2	1.5	1.6	2.0	2.0
173	2.0	2.0	0.0	3.0	1.0	1.6	2.0	2.0
174	2.0	2.0	0.0	2.0	1.5	1.6	2.0	1.9
175	2.0	2.0	1.0	2.8	3.0	2.6	3.0	2.4
176	1.0	2.0	0.0	3.0	2.5	2.6	2.0	2.4
177	2.0	2.0	0.0	2.2	2.0	2.3	3.0	2.0
178	2.0	2.0	0.0	2.4	2.5	2.6	3.0	1.9
179	2.0	2.0	3.0	2.0	2.0	2.6	3.0	2.0
180	2.0	2.5	3.0	1.8	2.0	2.3	2.0	2.0
181	2.0	2.5	1.0	2.2	2.5	2.6	2.5	2.4
182	1.0	2.5	1.0	1.4	2.5	2.6	1.5	1.9
183	2.0	2.5	1.0	1.6	2.5	2.6	2.5	2.3
184	2.0	2.5	1.0	1.6	2.5	2.6	2.5	2.3
185	2.0	2.5	3.0	3.0	2.5	2.6	2.5	2.6
186	2.0	2.5	3.0	3.0	2.5	2.6	1.5	2.5
187	2.0	2.5	3.0	1.8	1.5	2.3	2.0	2.1
188	2.0	2.5	3.0	2.2	3.0	3.0	2.5	2.2
189	2.0	2.5	0.0	2.0	3.0	3.0	3.0	2.0
190	2.0	2.5	3.0	2.0	3.0	3.0	3.0	2.4
191	2.0	2.5	3.0	1.8	2.0	2.3	2.0	2.0
192	2.0	2.5	3.0	1.6	2.0	2.3	2.0	1.9
193	2.0	2.5	3.0	2.6	2.5	2.6	3.0	2.3
194	2.0	2.5	3.0	2.6	2.5	2.6	2.0	2.2
195	2.0	2.0	1.0	1.8	2.5	2.6	2.0	2.3
196	2.0	1.5	2.0	2.6	2.0	2.0	2.0	2.3
197	2.0	2.0	2.0	2.8	2.0	2.0	2.0	2.3
198								

OBJ NO.	PRO 26	27	28	29	30	31	32	MEAN PROGRAM VALUES
198	1.0	1.5	2.0	2.0	1.5	2.0	2.0	2.0
199	1.0	2.5	3.0	3.0	3.0	3.0	2.0	2.6
200	3.0	2.5	3.0	2.8	3.0	3.0	3.0	2.7
201	3.0	2.5	3.0	3.0	2.5	2.6	2.0	2.7
202	2.0	2.0	1.0	2.0	3.0	3.0	3.0	2.6
203	3.0	2.5	2.0	2.2	3.0	3.0	3.0	2.7
204	3.0	2.5	2.0	2.0	3.0	3.0	3.0	2.6
205	3.0	2.5	2.0	2.4	2.5	2.6	3.0	2.6
206	2.0	2.5	2.0	2.4	3.0	3.0	1.5	2.6
207	3.0	2.5	3.0	2.2	3.0	3.0	1.5	2.4
208	3.0	2.5	2.0	2.2	3.0	3.0	3.0	2.7
209	3.0	2.0	2.0	1.8	3.0	3.0	3.0	2.5
210	3.0	2.0	2.0	1.8	3.0	3.0	3.0	2.5
211	3.0	2.0	3.0	2.0	3.0	3.0	2.5	2.6
212	2.0	2.5	3.0	2.2	3.0	3.0	3.0	2.7
213	2.0	2.0	2.0	2.0	3.0	3.0	3.0	2.5
214	3.0	2.5	2.0	1.6	3.0	3.0	2.5	2.6
215	3.0	2.5	2.0	1.8	3.0	3.0	3.0	2.6
216	2.0	2.5	2.0	1.8	3.0	2.3	2.0	2.4
217	2.0	2.5	1.0	1.8	2.5	2.6	2.0	2.5
218	3.0	2.5	3.0	2.0	1.5	2.3	2.5	2.5
219	3.0	2.5	3.0	1.8	2.0	2.6	2.0	2.6
220	3.0	2.5	1.0	1.8	2.0	2.3	2.0	2.4
221	3.0	2.5	2.0	1.8	2.0	2.6	2.5	2.6
222	2.0	2.5	1.0	2.4	2.0	2.6	2.5	2.5
223	3.0	2.5	0.0	2.4	2.0	2.6	2.0	2.4
224	2.0	2.5	1.0	2.4	2.5	2.6	3.0	2.6
225	2.0	2.5	1.0	2.2	2.0	2.6	3.0	2.4

PRO OBJ NO.	26	27	28	29	30	31	32	MEAN PROGRAM VALUES
226	3.0	2.5	1.0	2.0	2.5	2.6	3.0	2.5
227	3.0	2.5	3.0	2.2	2.0	2.6	3.0	2.6
228	3.0	2.5	1.0	2.2	2.0	2.3	2.5	2.4
229	3.0	2.5	1.0	2.4	2.0	2.3	2.5	2.4
230	3.0	2.0	1.0	2.0	2.0	2.3	3.0	2.4
231	3.0	2.5	2.0	2.4	2.5	2.6	3.0	2.6
232	2.0	2.5	1.0	2.2	2.5	2.6	1.5	2.6
233	3.0	2.5	1.0	2.4	2.5	2.6	2.0	2.4
234	2.0	2.5	3.0	2.0	2.5	2.3	1.5	2.6
235	3.0	2.0	1.0	2.2	2.5	1.6	1.5	2.3
236	1.0	2.5	1.0	2.8	3.0	3.0	3.0	2.4
237	2.0	2.5	2.0	2.4	3.0	3.0	3.0	2.6
238	3.0	2.5	1.0	2.4	3.0	3.0	3.0	2.6
239	2.0	2.5	1.0	2.8	2.5	2.6	3.0	2.6
240	3.0	2.5	2.0	2.6	2.5	2.6	3.0	2.5
241	2.0	2.5	0.0	2.4	2.5	2.6	3.0	2.4
242	3.0	2.5	0.0	2.8	2.0	2.6	3.0	2.4
243	3.0	2.0	0.0	2.2	2.0	2.6	3.0	2.3
244	3.0	2.0	0.0	2.6	2.0	2.3	2.5	2.2
245	3.0	2.5	0.0	2.4	3.0	3.0	3.0	2.6
246	3.0	2.5	2.0	2.4	3.0	3.0	3.0	2.6
247	3.0	2.5	2.0	2.6	3.0	3.0	3.0	2.7
248	3.0	2.5	2.0	2.0	1.5	2.0	3.0	2.2
249	3.0	2.5	0.0	1.6	1.5	2.0	3.0	2.2
250	2.0	2.5	0.0	1.8	2.0	2.3	2.0	2.3
251	3.0	2.5	0.0	1.8	2.0	2.0	2.0	2.3
252	2.0	2.0	0.0	1.4	1.0	1.0	2.0	2.0
253	3.0	2.5	0.0	2.6	3.0	3.0	3.0	2.6
254	3.0	2.5	0.0	2.6	3.0	3.0	3.0	2.4
255	2.0	2.5	0.0	2.4	3.0	3.0	3.0	2.4
256	3.0	2.5	0.0	1.8	3.0	3.0	3.0	2.3
257	3.0	2.5	0.0	1.6	3.0	3.0	3.0	2.3
258	3.0	2.5	0.0	1.4	3.0	3.0	3.0	2.3
259	3.0	2.5	0.0	3.0	3.0	3.0	3.0	2.5

PRO OBJ NO.	26	27	28	29	30	31	32	MEAN PROGRAM VALUES
260	2.0	2.5	0.0	3.0	3.0	3.0	3.0	2.5
261	2.0	2.0	0.0	1.8	1.5	1.3	2.0	2.2
262	3.0	2.0	0.0	1.8	1.5	1.6	2.0	2.1
263	2.0	2.5	0.0	2.8	2.0	1.6	2.0	2.3
264	3.0	2.5	0.0	2.8	2.0	2.0	2.0	2.1
265	3.0	2.5	0.0	2.8	2.0	1.6	2.0	2.2
266½	2.0	2.5	0.0	2.8	2.0	1.6	2.0	2.1
267	3.0	2.5	0.0	2.8	2.0	1.6	2.0	2.2
268	3.0	2.5	1.0	2.8	1.5	1.3	2.0	2.4
269	2.0	2.0	0.0	2.2	1.5	1.6	2.0	2.2
270	3.0	2.0	1.0	2.2	1.0	1.3	2.0	2.1
271	3.0	2.5	1.0	2.8	2.0	2.0	2.0	2.4
272	3.0	2.5	1.0	2.4	1.5	2.0	2.5	2.4
273	2.0	2.5	2.0	2.2	2.0	2.0	3.0	2.4
274	3.0	2.0	1.0	2.6	1.5	2.0	2.5	2.2
275	3.0	2.0	0.0	2.4	2.0	2.0	2.5	2.3
276	3.0	2.5	0.0	2.8	2.0	2.0	3.0	2.3
277	3.0	2.5	0.0	2.2	2.0	1.6	2.5	2.3
278	3.0	2.5	0.0	2.8	1.5	1.3	2.5	2.3
279	2.0	2.5	3.0	2.8	2.0	2.3	2.5	2.4
280	3.0	2.5	3.0	2.8	2.5	2.6	3.0	2.6
281	3.0	2.5	1.0	2.4	3.0	3.0	3.0	2.7
282	3.0	2.0	1.0	2.2	3.0	3.0	3.0	2.5
283	3.0	2.5	1.0	2.4	2.0	2.6	2.0	2.5
284	2.0	2.0	1.0	2.2	2.0	2.6	2.0	2.4
285	2.0	2.5	0.0	1.6	2.0	2.6	2.0	2.5
286	2.0	2.5	0.0	1.6	2.0	2.6	2.0	2.4
287	3.0	2.0	1.0	1.6	2.0	2.6	2.0	2.4
288	2.0	2.5	3.0	1.6	2.5	2.6	2.5	2.6
289	3.0	2.5	3.0	1.6	2.5	2.6	2.5	2.5

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES
0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

ANATOMY AND PHYSIOLOGY

OBJ NO. \ PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
1	0.0	1.0	1.0	3.0	3.0	0.0	3.0	0.0	2.0	1.3	2.0	3.0	2.3	3.0	2.5	2.0
2	0.0	1.0	1.0	2.0	3.0	0.0	2.0	0.0	2.1	1.0	2.0	2.0	2.0	2.0	2.0	2.0
3	0.0	1.0	1.0	2.0	0.0	0.0	2.0	0.0	2.1	1.0	2.0	2.0	2.0	2.0	2.0	1.6
4	0.0	1.0	1.0	3.0	0.0	0.0	3.0	0.0	2.7	2.3	2.0	1.5	2.3	3.0	2.5	1.2
5	0.0	1.0	1.0	2.0	0.0	0.0	2.0	2.0	2.4	0.3	2.0	1.0	2.0	2.0	2.0	1.4
6	0.0	1.0	1.0	3.0	0.0	0.0	1.0	3.0	2.8	0.3	2.0	2.0	2.3	1.0	2.0	1.4
7	0.0	1.0	0.0	3.0	0.0	0.0	1.0	3.0	2.7	0.3	2.0	2.0	2.3	1.0	2.0	0.8
8	0.0	1.0	2.0	3.0	3.0	0.0	2.0	3.0	2.8	2.6	2.0	3.0	3.0	2.0	2.0	1.4
10	0.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	1.7	3.0	2.5	3.0	2.6	2.0	2.5	1.6
11	0.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	1.8	3.0	2.5	3.0	2.6	3.0	2.5	2.0
12	0.0	1.0	2.0	2.0	3.0	0.0	3.0	0.0	1.5	3.0	2.5	3.0	2.6	2.0	2.5	2.0
13	0.0	1.0	1.0	1.0	0.0	0.0	2.0	0.0	1.1	3.0	2.0	3.0	2.6	3.0	2.5	1.8
14	0.0	1.0	1.0	1.0	0.0	0.0	2.0	0.0	1.2	3.0	2.0	2.5	2.6	2.0	3.0	3.0
15	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.2	3.0	2.0	2.5	2.6	2.0	3.0	3.0
16	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.4	3.0	2.0	3.0	2.6	2.0	3.0	3.0
17	0.0	1.0	3.0	0.0	0.0	0.0	1.0	0.0	1.2	2.6	2.0	2.0	2.6	1.0	2.5	3.0
18	0.0	1.0	3.0	0.0	0.0	0.0	1.0	0.0	1.2	2.3	2.0	1.5	2.6	1.0	2.0	2.8
19	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.4	2.3	2.0	3.0	2.6	2.0	2.5	2.8
20	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.2	2.3	2.0	2.5	2.6	2.0	2.0	2.8
21	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.4	2.3	2.5	3.0	2.6	2.0	2.5	2.2
24	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.4	3.0	3.0	3.0	2.6	2.0	2.5	2.2
25	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.2	2.3	2.5	2.5	2.6	3.0	2.5	1.6
26	0.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	1.4	0.6	2.0	2.0	2.3	3.0	2.5	1.2
27	0.0	1.0	0.0	0.0	0.0	0.0	1.0	0.0	1.0	2.0	2.0	2.0	2.6	2.0	3.0	2.2
28	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.2	2.0	2.5	2.5	2.6	3.0	2.5	1.6
29	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.2	2.0	2.0	2.0	3.0	2.0	3.0	1.2
30	0.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	1.7	1.3	2.0	2.0	3.0	3.0	2.5	1.2
31	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.4	3.0	2.5	2.5	2.6	2.0	2.5	3.0

PRO OBJ NO.	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
32	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.4	3.0	3.0	3.0	2.6	2.0	2.5	2.8
33	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	3.0	3.0	3.0	2.6	2.0	2.5	2.8
34	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.4	1.3	3.0	2.5	3.0	2.0	2.5	3.0
35	0.0	1.0	2.0	1.0	0.0	0.0	2.0	3.0	2.1	2.6	2.5	2.5	2.6	2.0	2.5	2.6
36	0.0	1.0	2.0	1.0	0.0	0.0	2.0	3.0	2.1	2.6	3.0	3.0	3.0	1.0	2.5	2.6
37	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.4	3.0	2.5	2.5	2.6	1.0	2.5	2.4
38	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	3.0	2.5	2.5	2.6	2.0	2.5	2.2
39	0.0	1.0	2.0	0.0	0.0	0.0	0.0	0.0	1.2	1.0	3.0	2.5	2.6	2.0	2.5	1.6
40	0.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	1.2	1.0	2.5	2.0	2.6	2.0	2.5	1.8
41	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	1.6	2.5	2.5	3.0	2.0	2.5	2.0
42	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	1.6	2.0	2.0	2.6	2.0	2.5	1.8
43	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	2.6	2.0	2.5	3.0	3.0	2.5	2.2
44	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	0.8	2.6	2.5	3.0	2.6	2.0	2.5	1.8
45	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	0.8	2.3	2.5	2.5	2.6	1.0	2.5	1.8
47	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	0.8	2.6	2.5	3.0	2.6	1.0	2.5	2.4
49	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	0.8	2.6	2.0	3.0	2.6	2.0	2.5	2.0
50	0.0	1.0	2.0	2.0	0.0	0.0	2.0	3.0	1.7	3.0	3.0	3.0	2.6	3.0	2.5	3.0
51	0.0	1.0	2.0	1.0	0.0	0.0	2.0	3.0	1.5	3.0	3.0	3.0	2.6	3.0	2.5	2.8
52	0.0	1.0	2.0	1.0	0.0	0.0	2.0	0.0	1.5	3.0	2.5	2.5	2.6	3.0	2.5	2.4
53	0.0	1.0	2.0	0.0	0.0	0.0	2.0	0.0	1.4	2.6	2.5	3.0	2.6	3.0	2.5	2.2
54	0.0	1.0	2.0	0.0	0.0	0.0	3.0	3.0	1.4	0.6	2.0	3.0	3.0	3.0	2.0	1.4
55	0.0	1.0	2.0	1.0	0.0	0.0	0.0	3.0	2.1	2.6	2.5	3.0	3.0	2.0	2.5	2.2
56	0.0	1.0	2.0	2.0	0.0	0.0	3.0	3.0	2.1	2.3	2.5	2.0	3.0	2.0	2.5	1.6
57	0.0	1.0	2.0	2.0	0.0	0.0	2.0	3.0	2.4	2.6	2.5	2.0	2.6	2.0	2.5	1.8
58	0.0	1.0	1.0	2.0	0.0	0.0	2.0	3.0	2.4	2.6	2.5	3.0	2.6	2.0	2.0	2.2
59	0.0	1.0	2.0	1.0	0.0	0.0	2.0	3.0	1.7	2.6	2.5	3.0	3.0	3.0	2.5	1.6
60	0.0	1.0	1.0	3.0	0.0	0.0	1.0	3.0	1.8	1.0	2.0	2.5	2.6	1.0	2.5	2.0
61	0.0	1.0	1.0	2.0	0.0	0.0	1.0	2.0	1.4	1.3	2.0	3.0	2.6	2.0	2.0	1.8
62	0.0	1.0	2.0	2.0	0.0	0.0	2.0	2.0	1.5	2.3	2.5	3.0	3.0	3.0	2.5	2.2
63	0.0	1.0	2.0	2.0	0.0	0.0	1.0	2.0	1.5	2.3	2.0	2.0	2.6	2.0	2.5	1.6
64	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.2	2.3	2.0	3.0	2.6	2.0	2.5	1.6
65	0.0	1.0	1.0	2.0	0.0	0.0	1.0	2.0	1.5	1.6	2.5	2.5	2.6	3.0	2.5	1.6
66	0.0	1.0	2.0	2.0	0.0	0.0	3.0	3.0	2.8	2.6	2.5	3.0	2.6	2.0	2.5	1.0

OBJ NO.	PRO 3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
67	0.0	1.0	2.0	2.0	0.0	0.0	3.0	3.0	2.8	2.6	2.5	2.5	2.6	2.0	2.5	1.4
68	0.0	1.0	3.0	2.0	0.0	0.0	3.0	3.0	3.0	2.0	2.5	3.0	3.0	3.0	2.5	1.4
69	0.0	1.0	2.0	1.0	0.0	0.0	3.0	3.0	3.0	2.3	2.5	3.0	2.6	1.0	2.5	0.8
70	0.0	1.0	2.0	1.0	0.0	0.0	3.0	3.0	3.0	2.6	2.5	2.5	3.0	2.0	2.5	1.0
71	0.0	1.0	2.0	1.0	0.0	0.0	1.0	2.0	1.5	2.6	2.5	3.0	2.6	2.0	2.5	1.8
72	0.0	1.0	2.0	2.0	0.0	0.0	1.0	2.0	1.5	2.6	2.5	2.0	2.6	2.0	2.5	1.8
73	0.0	1.0	2.0	2.0	0.0	0.0	2.0	2.0	1.8	2.6	2.5	2.5	2.6	2.0	2.5	2.2
74	0.0	1.0	2.0	1.0	0.0	0.0	2.0	2.0	1.7	2.6	2.5	3.0	2.6	2.0	2.5	2.2
75	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.2	2.6	2.0	3.0	2.6	1.0	2.5	2.0
76	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	1.6	2.0	3.0	3.0	1.0	2.5	1.6
77	0.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	1.4	2.3	2.5	2.5	3.0	1.0	2.5	1.6
78	0.0	1.0	2.0	1.0	0.0	0.0	0.0	0.0	1.1	0.6	2.0	2.5	2.6	1.0	2.5	1.2
79	0.0	1.0	2.0	0.0	0.0	0.0	1.0	0.0	1.4	1.0	2.0	2.5	2.6	2.0	2.5	1.6
80	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.5	2.3	2.0	3.0	2.6	2.0	2.5	1.6
81	0.0	1.0	2.0	1.0	0.0	0.0	1.0	0.0	1.4	1.6	2.0	2.5	2.6	2.0	2.5	1.6
82	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	1.0	2.6	2.5	3.0	2.6	2.0	2.5	2.2
83	0.0	1.0	2.0	2.0	0.0	0.0	2.0	0.0	2.2	1.6	2.5	3.0	3.0	1.0	2.5	1.4
84	0.0	1.0	2.0	3.0	0.0	0.0	1.0	0.0	2.5	1.3	2.5	3.0	3.0	1.0	2.5	1.2
85	0.0	1.0	2.0	3.0	0.0	0.0	1.0	0.0	2.5	2.6	2.5	2.5	2.6	1.0	2.5	1.6
86	0.0	1.0	3.0	1.0	0.0	0.0	1.0	0.0	1.4	2.6	2.0	3.0	2.6	2.0	2.5	2.0
87	0.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	1.4	2.6	2.5	2.5	2.6	3.0	1.5	2.2
88	0.0	1.0	2.0	3.0	0.0	0.0	1.0	2.0	1.5	2.6	3.0	3.0	2.6	3.0	2.0	2.8
89	0.0	1.0	3.0	3.0	0.0	0.0	1.0	3.0	2.4	1.6	2.5	2.0	2.3	3.0	1.5	1.2
90	0.0	1.0	2.0	3.0	0.0	0.0	2.0	3.0	2.5	2.3	2.5	3.0	2.6	3.0	1.5	1.4
91	0.0	1.0	2.0	3.0	0.0	0.0	1.0	3.0	3.0	2.3	2.5	2.5	2.6	1.0	1.5	1.2
92	0.0	1.0	1.0	3.0	0.0	0.0	2.0	2.0	1.8	2.6	2.5	3.0	2.6	1.0	2.0	2.8
93	0.0	1.0	2.0	3.0	0.0	0.0	2.0	2.0	2.0	2.6	2.5	3.0	2.6	3.0	1.5	2.6
94	0.0	1.0	2.0	3.0	0.0	0.0	2.0	2.0	2.2	2.6	2.5	3.0	2.6	3.0	2.0	2.8
95	0.0	1.0	2.0	3.0	0.0	0.0	1.0	0.0	1.7	2.6	2.5	2.5	2.6	3.0	2.0	2.0
96	0.0	1.0	2.0	3.0	0.0	0.0	1.0	0.0	1.7	2.6	2.5	3.0	2.6	3.0	2.0	1.2
97	0.0	1.0	2.0	3.0	0.0	0.0	1.0	0.0	2.1	2.6	2.5	3.0	2.6	1.0	1.5	1.2
98	0.0	1.0	2.0	3.0	0.0	0.0	3.0	0.0	2.2	2.6	2.5	3.0	2.6	1.0	2.0	3.0
99	0.0	1.0	2.0	1.0	0.0	0.0	3.0	0.0	2.5	2.3	2.5	3.0	2.6	2.0	2.0	2.8

OBJ NO.	PRO 3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
100	0.0	1.0	2.0	1.0	0.0	0.0	3.0	0.0	2.2	2.0	2.5	3.0	3.0	3.0	2.0	1.8
101	0.0	1.0	2.0	1.0	0.0	0.0	3.0	2.0	2.2	2.6	2.5	2.5	2.6	2.0	2.0	3.0
012	0.0	1.0	2.0	1.0	0.0	0.0	3.0	2.0	2.7	2.6	2.0	3.0	3.0	3.0	2.0	2.0
103	0.0	1.0	2.0	1.0	0.0	0.0	3.0	2.0	2.5	2.0	2.0	3.0	3.0	3.0	1.5	2.0
104	0.0	1.0	2.0	2.0	0.0	0.0	3.0	3.0	2.4	1.6	2.0	3.0	3.0	3.0	2.0	1.4
105	0.0	1.0	2.0	0.0	0.0	0.0	3.0	3.0	2.4	2.3	2.5	2.5	3.0	2.0	1.5	1.4
106	0.0	1.0	2.0	2.0	0.0	0.0	1.0	0.0	2.1	2.6	2.5	3.0	2.6	2.0	2.0	3.0
107	0.0	1.0	2.0	2.0	0.0	0.0	1.0	2.0	2.0	2.6	2.0	3.0	3.0	2.0	2.5	2.4
108	0.0	1.0	2.0	2.0	0.0	0.0	1.0	2.0	2.0	2.6	2.0	3.0	2.6	2.0	2.0	1.4
109	0.0	1.0	2.0	3.0	0.0	0.0	1.0	3.0	2.5	2.3	2.0	2.5	2.6	3.0	2.0	0.8
110	0.0	2.0	2.0	2.0	0.0	0.0	1.0	2.0	2.5	2.6	2.0	3.0	2.6	3.0	2.0	1.6
111	0.0	2.0	2.0	1.0	3.0	0.0	1.0	0.0	1.7	3.0	2.5	3.0	2.6	2.0	2.0	2.4
112	0.0	2.0	2.0	1.0	0.0	0.0	1.0	0.0	1.5	2.6	2.0	3.0	2.6	3.0	2.0	1.4
113	0.0	2.0	2.0	1.0	0.0	0.0	1.0	0.0	1.7	3.0	2.5	3.0	2.6	2.0	2.0	2.4
114	0.0	2.0	2.0	1.0	0.0	0.0	1.0	0.0	1.7	2.3	2.5	3.0	2.6	2.0	2.0	2.0
115'	0.0	2.0	2.0	0.0	0.0	0.0	1.0	0.0	2.0	3.0	2.5	3.0	2.6	2.0	2.0	1.6
116	0.0	2.0	2.0	1.0	0.0	0.0	1.0	0.0	2.0	3.0	2.5	3.0	2.6	2.0	2.0	1.4
117	0.0	2.0	2.0	0.0	0.0	0.0	1.0	0.0	1.4	1.3	2.0	2.0	2.3	2.0	1.5	1.2
118	0.0	2.0	2.0	0.0	0.0	0.0	1.0	0.0	1.2	3.0	2.5	3.0	2.6	3.0	2.0	2.0
119	0.0	1.0	3.0	3.0	0.0	0.0	1.0	2.0	1.2	2.6	2.0	2.5	2.6	3.0	1.5	1.0
120	0.0	2.0	3.0	3.0	0.0	0.0	1.0	2.0	1.7	2.3	2.5	2.0	3.0	1.0	2.0	1.2
121	0.0	1.0	2.0	3.0	0.0	0.0	3.0	3.0	2.8	2.3	2.5	2.5	3.0	3.0	2.0	1.0
127	0.0	1.0	2.0	3.0	0.0	0.0	2.0	3.0	2.1	2.6	2.0	2.5	3.0	3.0	2.0	1.6
123	0.0	1.0	2.0	3.0	0.0	0.0	3.0	3.0	3.0	2.0	2.0	2.5	3.0	3.0	2.0	1.2
124	0.0	1.0	2.0	3.0	0.0	0.0	3.0	3.0	2.8	2.0	1.5	3.0	2.6	3.0	2.0	0.8
125	0.0	1.0	2.0	3.0	0.0	0.0	3.0	3.0	2.8	2.3	2.0	3.0	3.0	3.0	2.0	1.0
126	0.0	1.0	2.0	3.0	0.0	0.0	3.0	3.0	3.0	1.3	2.0	3.0	3.0	3.0	1.5	1.0
128	0.0	2.0	2.0	2.0	0.0	0.0	1.0	0.0	2.4	2.6	2.5	3.0	3.0	2.0	2.5	1.2
129	0.0	2.0	2.0	1.0	0.0	0.0	1.0	0.0	2.2	2.6	2.5	2.5	2.6	2.0	2.5	1.2
130	0.0	1.0	2.0	3.0	0.0	0.0	3.0	2.0	2.7	2.6	2.5	3.0	2.6	2.0	2.0	1.2
131	0.0	1.0	2.0	3.0	0.0	0.0	3.0	2.0	2.2	3.0	2.5	3.0	2.6	1.0	2.0	1.4
132	0.0	1.0	2.0	3.0	0.0	0.0	2.0	2.0	2.1	2.6	2.0	2.5	2.6	2.0	2.0	1.2
133	0.0	1.0	2.0	3.0	0.0	0.0	2.0	2.0	2.5	2.6	2.5	3.0	2.6	1.0	2.0	0.8
134	0.0	1.0	2.0	3.0	0.0	0.0	1.0	2.0	2.1	2.6	2.0	2.5	2.6	1.0	1.5	0.8

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES
0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

ANATOMY AND PHYSIOLOGY

OBJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
1	1.5	2.7	2.0	2.2
2	1.5	2.2	2.0	2.0
3	1.5	2.2	2.0	2.0
4	1.5	2.2	2.0	2.1
5	1.5	2.2	2.0	1.9
6	1.5	2.2	2.5	2.1
7	1.5	2.2	2.0	2.0
8	2.0	2.7	3.0	2.4
10	2.0	2.5	2.0	2.1
11	1.5	2.5	2.0	2.3
12	1.5	2.5	2.0	2.2
13	1.0	2.0	1.5	1.9
14	1.5	2.2	2.0	2.1
15	1.5	2.0	2.5	2.1
16	1.5	2.2	2.0	2.2
17	1.5	2.2	2.0	2.1
18	1.5	2.2	2.0	2.0
19	1.5	2.2	1.5	2.2
20	1.5	2.2	1.5	2.1
21	1.5	2.2	1.5	2.1
24	2.0	2.5	2.5	2.2
25	2.0	2.5	3.0	2.0
26	2.0	2.5	2.0	1.9
27	1.5	2.2	2.0	1.8
28	1.5	2.2	2.5	2.0
29	2.0	2.5	2.5	1.9
30	2.0	2.5	3.0	2.1
31	2.0	2.7	3.0	2.3

OBJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
32	2.0	2.7	3.0	2.3
33	2.0	2.7	3.0	2.2
34	2.0	2.7	3.0	2.3
35	2.0	2.7	3.0	2.4
36	2.0	2.7	3.0	2.5
37	2.0	2.7	3.0	2.1
38	2.0	2.7	3.0	2.1
39	2.0	2.5	3.0	2.0
40	2.0	2.5	3.0	2.0
41	2.0	2.5	3.0	2.0
42	2.0	2.5	3.0	1.9
43	2.0	2.7	3.0	2.1
44	1.0	2.0	2.0	1.8
45	1.0	2.0	2.0	1.8
47	1.0	2.0	2.0	1.9
49	1.0	2.0	2.5	1.8
50	2.5	3.0	3.0	2.5
51	2.5	3.0	3.0	2.4
52	2.5	3.0	3.0	2.3
53	2.5	3.0	3.0	2.2
54	2.5	3.0	3.0	2.0
55	2.5	3.0	3.0	2.4
56	2.5	3.0	3.0	2.3
57	2.0	2.5	2.5	2.3
58	2.0	2.5	2.5	2.4
59	2.5	3.0	3.0	2.2
60	1.5	2.0	2.5	2.1
61	1.5	2.5	3.0	2.0
62	2.5	3.0	3.0	2.4
63	2.0	2.7	3.0	2.0
64	2.0	2.7	3.0	2.0
65	2.0	2.7	3.0	2.1
66	2.0	2.5	3.0	2.3

	PRO			MEAN PROGRAM VALUES
OBJ NO.	30	31	32	
67	2.5	2.7	3.0	2.4
68	2.0	2.5	3.0	2.5
69	2.0	2.5	3.0	2.2
70	1.5	2.5	3.0	2.3
71	3.0	3.0	3.0	2.2
72	3.0	3.0	3.0	2.1
73	3.0	3.0	3.0	2.3
74	3.0	3.0	3.0	2.3
75	3.0	2.7	3.0	2.0
76	3.0	3.0	3.0	2.0
77	3.0	3.0	3.0	2.1
78	3.0	3.0	2.5	1.8
79	3.0	2.7	2.5	2.0
80	3.0	2.7	3.0	2.1
81	3.0	2.7	3.0	2.0
82	3.0	3.0	3.0	2.1
83	3.0	3.0	3.0	2.3
84	3.0	3.0	3.0	2.4
85	3.0	2.7	3.0	2.4
86	3.0	3.0	3.0	2.2
87	1.5	2.2	2.0	2.1
88	1.5	2.2	2.0	2.1
89	1.5	2.5	2.0	2.2
90	1.5	2.2	2.0	2.3
91	1.5	2.2	2.0	2.2
92	1.5	2.2	2.5	2.3
93	1.5	2.2	2.0	2.4
94	1.5	2.2	2.5	2.5
95	1.5	2.2	2.0	2.2
96	1.5	2.2	1.5	2.1
97	1.5	2.2	2.0	2.1
98	2.0	2.2	3.0	2.5
99	1.5	2.2	3.0	2.5

PRO	30	31	32	MEAN PROGRAM VALUES
OBJ NO.				
100	1.5	2.2	3.0	2.3
101	1.5	2.2	3.0	2.4
102	1.5	2.2	3.0	2.4
103	1.5	2.2	3.0	2.3
104	1.5	2.2	3.0	2.2
105	1.5	2.5	3.0	2.1
106	1.5	2.2	3.0	2.4
107	1.5	2.2	3.0	2.3
108	1.0	2.2	2.5	2.1
109	1.5	2.2	3.0	2.1
110	1.5	2.2	3.0	2.3
111	1.0	2.2	2.0	2.2
112	1.0	2.0	2.0	1.9
113	1.0	2.0	2.0	2.1
114	1.0	2.0	1.5	2.1
115	1.0	2.0	1.5	2.0
116	1.0	2.0	2.0	2.0
117	1.0	2.0	1.5	1.6
118	1.0	2.0	1.5	2.0
119	1.0	2.2	2.0	1.8
120	1.0	2.0	2.0	2.0
121	2.0	2.7	3.0	2.4
127	2.0	2.7	3.0	2.3
123	2.5	2.7	3.0	2.4
124	2.5	2.7	3.0	2.3
125	2.5	2.7	3.0	2.4
126	3.0	3.0	3.0	2.4
128	2.5	2.7	2.5	2.3
129	2.5	2.7	2.5	2.2
130	2.5	2.7	2.5	2.4
131	2.5	2.7	2.0	2.2
132	2.5	2.7	2.0	2.1
133	1.5	2.5	1.5	2.2
134	1.5	2.5	2.0	2.0

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

CHEMISTRY

OBJ NO. \ PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
1	0.0	0.0	3.0	3.0	3.0	0.0	3.0	3.0	2.7	1.5	3.0	2.5	3.0	1.0	2.5	1.2
2	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	3.0	2.5	3.0	1.0	2.5	1.5
3	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	3.0	1.5	3.0	1.0	2.5	1.0
4	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	3.0	2.5	3.0	1.0	2.5	1.0
5	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	3.0	2.5	3.0	1.0	2.5	1.0
6	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.5	1.5	3.0	1.5	3.0	1.0	2.5	1.0
7	0.0	0.0	3.0	2.0	0.0	0.0	3.0	2.0	2.5	0.0	2.5	0.5	2.6	1.0	2.0	0.2
8	0.0	0.0	3.0	3.0	0.0	0.0	2.0	3.0	2.3	1.5	2.5	2.0	2.6	1.0	2.0	0.7
9	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.8	0.0	3.0	1.5	2.3	2.0	2.0	0.0
10	0.0	0.0	0.0	3.0	0.0	0.0	3.0	3.0	2.8	0.0	3.0	0.0	2.3	2.0	2.0	0.0
11	0.0	0.0	3.0	3.0	2.0	0.0	3.0	3.0	2.5	0.0	2.5	2.5	2.3	2.0	2.0	1.5
12	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.1	0.0	2.5	1.0	2.0	2.0	1.0	1.5
13	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.5	0.0	2.5	2.0	3.0	2.0	1.5	1.5
14	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.7	0.0	1.5	0.5	1.3	2.0	1.0	0.5
15	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.7	0.0	1.0	0.5	1.3	2.0	1.5	0.7
16	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.7	0.0	0.5	0.5	1.3	2.0	1.0	0.5
17	0.0	0.0	3.0	1.0	0.0	0.0	1.0	2.0	1.8	0.0	2.0	1.0	2.0	1.0	1.0	1.2
18	0.0	0.0	3.0	1.0	0.0	0.0	1.0	2.0	2.0	0.0	2.0	1.5	1.6	1.0	1.0	1.2
19	0.0	0.0	3.0	1.0	0.0	0.0	1.0	2.0	2.0	0.0	1.5	1.5	1.6	1.0	1.0	1.5
20	0.0	0.0	3.0	2.0	3.0	0.0	1.0	3.0	2.1	0.0	2.0	1.5	2.6	2.0	1.0	0.2
21	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	2.0	0.0	1.0	0.5	1.6	2.0	1.0	0.7
22	0.0	0.0	3.0	1.0	0.0	0.0	0.0	3.0	1.8	0.0	2.0	0.0	1.6	1.0	1.0	0.0
23	0.0	0.0	3.0	2.0	0.0	0.0	1.0	3.0	1.7	0.0	2.0	1.0	2.0	2.0	1.0	0.0
24	0.0	0.0	2.0	2.0	2.0	0.0	2.0	3.0	2.0	0.0	2.5	2.0	2.0	2.0	1.0	0.0
25	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.2	0.0	2.5	1.0	2.6	3.0	1.0	0.2
26	0.0	0.0	2.0	2.0	0.0	0.0	2.0	3.0	2.2	0.0	2.5	0.5	2.6	3.0	1.0	0.0
27	0.0	0.0	2.0	1.0	0.0	0.0	0.0	3.0	1.8	0.0	1.5	1.0	2.3	2.0	1.0	0.2
28	0.0	0.0	3.0	1.0	2.0	0.0	3.0	3.0	2.1	0.0	2.5	1.5	2.6	2.0	1.0	1.2
29	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	3.0	0.0	2.5	1.0	2.3	3.0	1.5	0.7

```
         PRO    3     6    10    12    13    15    17    18    19    21    22    23    24    25    27    29
 ORJ
 NO.
  30          0.0   0.0   2.0   2.0   0.0   0.0   3.0   3.0   2.6   0.0   2.0   0.5   2.3   2.0   1.5   0.0
  31          0.0   0.0   2.0   1.0   0.0   0.0   3.0   3.0   2.7   0.0   2.0   0.0   2.3   3.0   1.5   0.0
  32          0.0   0.0   2.0   1.0   0.0   0.0   3.0   3.0   3.0   0.0   2.0   0.0   2.3   3.0   1.5   0.0
  33          0.0   0.0   2.0   1.0   0.0   0.0   3.0   3.0   2.8   0.0   2.0   0.0   2.3   3.0   1.5   0.0
  34          0.0   0.0   3.0   1.0   2.0   0.0   0.0   2.0   2.0   0.0   1.0   1.5   2.6   3.0   1.5   0.5

  35          0.0   0.0   3.0   1.0   0.0   0.0   0.0   2.0   2.0   0.0   1.0   0.5   1.6   1.0   1.0   0.0
  36          0.0   0.0   3.0   1.0   0.0   0.0   0.0   1.0   2.1   0.0   1.0   0.5   1.6   2.0   1.0   0.0
  37          0.0   0.0   3.0   1.0   0.0   0.0   0.0   2.0   1.7   0.0   1.0   0.5   1.6   2.0   1.0   0.0
  38          0.0   0.0   3.0   1.0   0.0   0.0   0.0   2.0   1.7   0.0   1.5   1.5   1.6   2.0   1.0   0.0
  39          0.0   0.0   3.0   1.0   0.0   0.0   0.0   2.0   1.5   0.0   1.0   1.0   1.6   1.0   1.0   0.0

  40          0.0   0.0   2.0   1.0   0.0   0.0   0.0   2.0   1.7   0.0   1.0   1.5   1.6   2.0   1.0   0.0
  41          0.0   0.0   3.0   2.0   2.0   0.0   2.0   3.0   2.7   0.0   2.0   0.0   2.0   1.0   1.0   0.0
  42          0.0   0.0   3.0   2.0   0.0   0.0   1.0   3.0   2.5   0.0   1.5   0.0   2.0   1.0   1.0   0.0
  44          0.0   0.0   3.0   2.0   0.0   0.0   1.0   3.0   2.5   0.0   2.0   0.5   2.6   2.0   1.5   0.0
  45          0.0   0.0   3.0   2.0   0.0   0.0   1.0   3.0   2.3   0.0   1.5   0.0   2.3   3.0   1.5   0.0
  46          0.0   0.0   3.0   2.0   0.0   0.0   1.0   3.0   2.3   0.0   1.5   0.0   2.3   3.0   1.5   0.0
  47          0.0   0.0   3.0   1.0   0.0   0.0   0.0   3.0   1.8   0.0   1.5   0.0   2.3   3.0   1.5   0.0
  48          0.0   0.0   3.0   2.0   2.0   0.0   2.0   3.0   1.8   0.0   2.0   0.5   3.0   2.0   1.5   0.0
  49          0.0   0.0   3.0   3.0   2.0   0.0   3.0   3.0   2.5   0.0   3.0   2.0   3.0   3.0   1.5   0.0
  50          0.0   0.0   3.0   3.0   0.0   0.0   3.0   3.0   2.8   0.0   2.5   3.0   3.0   3.0   1.5   0.5
  51          0.0   0.0   3.0   2.0   0.0   0.0   2.0   3.0   2.6   0.0   2.5   2.0   2.6   2.0   1.5   0.2
  52          0.0   0.0   1.0   2.0   0.0   0.0   0.0   3.0   2.5   0.0   2.5   1.5   2.6   3.0   1.0   0.0
  53          0.0   0.0   1.0   2.0   0.0   0.0   2.0   3.0   2.2   0.0   2.5   1.5   3.0   3.0   1.0   0.0
  54          0.0   0.0   1.0   2.0   0.0   0.0   0.0   2.0   2.1   0.0   1.5   1.5   1.6   2.0   1.0   0.0
  55          0.0   0.0   1.0   2.0   0.0   0.0   0.0   2.0   2.1   0.0   2.0   1.0   1.6   2.0   1.0   0.0
  56          0.0   0.0   1.0   2.0   0.0   0.0   1.0   2.0   2.1   0.0   1.5   0.5   1.6   2.0   1.0   0.0
  57          0.0   0.0   2.0   2.0   2.0   0.0   1.0   2.0   2.0   0.0   1.5   2.0   3.0   2.0   1.5   0.0
  58          0.0   0.0   2.0   2.0   0.0   0.0   1.0   3.0   2.1   0.0   2.0   1.5   3.0   2.0   1.5   0.0
  59          0.0   0.0   2.0   2.0   0.0   0.0   1.0   3.0   2.1   0.0   2.0   0.5   2.6   2.0   1.5   0.0
  60          0.0   0.0   2.0   1.0   0.0   0.0   1.0   3.0   2.2   0.0   2.0   0.0   2.3   2.0   2.0   0.0
  61          0.0   0.0   2.0   2.0   0.0   0.0   1.0   3.0   1.6   0.0   1.0   0.0   2.3   2.0   1.5   0.0
  62          0.0   0.0   2.0   2.0   0.0   0.0   1.0   3.0   2.0   0.0   1.0   0.5   2.3   2.0   1.5   0.0
  63          0.0   0.0   2.0   2.0   0.0   0.0   1.0   3.0   2.5   0.0   2.0   1.0   3.0   2.0   2.0   0.2
```

OBJ NO. \ PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
64	0.0	0.0	2.0	0.0	0.0	0.0	0.0	2.0	1.5	0.0	2.0	1.0	3.0	1.0	1.5	0.0
65	0.0	0.0	3.0	3.0	2.0	0.0	3.0	3.0	2.8	0.0	2.5	2.5	3.0	3.0	1.5	0.2
66	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	2.2	0.0	1.5	2.5	3.0	2.0	1.5	0.2
67	0.0	0.0	3.0	2.0	0.0	0.0	3.0	0.0	2.1	0.0	2.0	2.0	1.3	2.0	1.0	0.0
69	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	3.0	0.0	2.0	0.0	2.6	2.0	1.0	0.0
70	0.0	0.0	3.0	2.0	0.0	0.0	3.0	2.0	2.1	0.0	2.0	3.0	3.0	2.0	1.5	0.2
71	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	2.5	0.0	2.0	3.0	2.6	1.0	1.0	0.2
72	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	2.2	0.0	2.0	3.0	3.0	2.0	2.0	0.2
73	0.0	0.0	3.0	2.0	0.0	0.0	2.0	2.0	2.2	0.0	2.0	1.5	2.6	2.0	1.0	0.0
74	0.0	0.0	3.0	2.0	2.0	0.0	2.0	2.0	2.8	0.0	2.0	2.0	3.0	3.0	1.0	0.0
75	0.0	0.0	3.0	2.0	2.0	0.0	3.0	3.0	2.8	0.0	2.0	2.0	3.0	3.0	1.0	0.0
76	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	2.3	0.0	1.0	1.5	3.0	2.0	1.0	0.0
77	0.0	0.0	2.0	1.0	0.0	0.0	0.0	3.0	2.3	0.0	2.0	1.5	3.0	3.0	1.0	0.0
78	0.0	0.0	2.0	1.0	0.0	0.0	0.0	3.0	2.2	0.0	2.0	1.0	3.0	3.0	1.0	0.0
79	0.0	0.0	2.0	2.0	0.0	0.0	0.0	3.0	2.3	0.0	1.5	0.0	2.6	3.0	1.0	0.0
80	0.0	0.0	2.0	2.0	0.0	0.0	0.0	3.0	2.3	0.0	1.5	0.0	2.6	3.0	1.0	0.0
81	0.0	0.0	2.0	2.0	0.0	0.0	3.0	3.0	2.6	0.0	1.5	0.5	2.6	3.0	1.0	0.0
82	0.0	0.0	2.0	2.0	0.0	0.0	3.0	3.0	2.6	0.0	1.5	0.0	2.3	3.0	1.0	0.0
83	0.0	0.0	2.0	2.0	0.0	0.0	1.0	3.0	2.6	0.0	1.5	0.0	2.6	3.0	1.0	0.0
84	0.0	0.0	2.0	2.0	0.0	0.0	1.0	3.0	2.6	0.0	1.5	0.0	2.6	3.0	1.0	0.0
85	0.0	0.0	2.0	2.0	0.0	0.0	3.0	3.0	2.8	0.0	3.0	3.0	3.0	3.0	1.5	0.0
86	0.0	0.0	2.0	3.0	0.0	0.0	3.0	3.0	2.8	0.0	3.0	3.0	3.0	3.0	1.0	0.0
87	0.0	0.0	2.0	2.0	0.0	0.0	0.0	3.0	2.5	0.0	2.0	3.0	2.3	3.0	1.0	0.0
88	0.0	0.0	2.0	2.0	0.0	0.0	0.0	3.0	2.6	0.0	1.0	0.0	2.3	3.0	0.5	0.0
89	0.0	0.0	2.0	2.0	0.0	0.0	0.0	3.0	2.6	0.0	1.0	0.0	2.3	3.0	0.5	0.0
90	0.0	0.0	2.0	3.0	0.0	0.0	0.0	3.0	2.6	0.0	2.0	2.5	3.0	3.0	1.0	0.0
91	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	2.1	0.0	2.0	1.5	2.6	3.0	1.0	0.0
92	0.0	0.0	2.0	2.0	0.0	0.0	2.0	3.0	2.7	0.0	2.5	3.0	3.0	3.0	1.5	0.0
93	0.0	0.0	3.0	2.0	2.0	0.0	1.0	2.0	2.6	0.0	2.0	3.0	3.0	2.0	1.0	1.5
94	0.0	0.0	2.0	2.0	0.0	0.0	0.0	2.0	2.3	0.0	0.5	0.0	2.3	2.0	0.5	0.5
95	0.0	0.0	1.0	2.0	0.0	0.0	0.0	2.0	2.5	0.0	0.5	2.5	2.6	2.0	0.5	1.2
96	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.5	0.0	2.5	3.0	2.0	1.0	0.5	2.0
97	0.0	0.0	3.0	2.0	0.0	0.0	1.0	3.0	2.0	0.0	2.5	3.0	2.3	1.0	0.5	2.0
98	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.6	1.5	2.5	3.0	2.6	2.0	1.5	2.2
99	0.0	0.0	3.0	2.0	2.0	0.0	0.0	2.0	1.6	0.0	1.5	1.5	2.0	0.0	1.5	0.0

PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
OBJ NO.																
100	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.6	0.0	1.5	1.5	1.6	0.0	1.5	0.0
101	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.6	0.0	1.5	1.5	1.6	0.0	1.5	0.0
102	0.0	0.0	3.0	2.0	0.0	0.0	0.0	3.0	1.8	0.0	2.0	1.5	1.3	0.0	1.5	0.0
103	0.0	0.0	3.0	2.0	0.0	0.0	0.0	3.0	1.6	0.0	2.0	1.5	1.6	0.0	1.5	0.0
104	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	1.3	0.0	2.0	1.5	1.6	0.0	1.5	0.0
106	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.3	0.0	2.0	1.5	1.3	0.0	1.5	0.0
107	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.5	0.0	1.0	1.5	1.6	0.0	1.5	0.0
108	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.5	0.0	1.0	1.5	1.3	0.0	1.0	0.0
109	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.6	0.0	1.0	1.5	1.6	0.0	1.0	0.0
110	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.6	0.0	1.0	1.5	2.0	0.0	1.0	0.0
111	0.0	0.0	3.0	1.0	0.0	0.0	0.0	2.0	1.6	0.0	1.0	1.5	2.0	0.0	1.0	0.0
112	0.0	0.0	3.0	2.0	0.0	0.0	0.0	3.0	1.7	0.0	2.0	1.5	1.6	0.0	1.0	0.0
113	0.0	0.0	3.0	3.0	2.0	0.0	2.0	3.0	2.3	0.0	2.0	2.5	2.3	0.0	1.5	0.0
114	0.0	0.0	3.0	2.0	0.0	0.0	2.0	1.0	2.2	0.0	2.0	0.0	2.0	0.0	1.5	0.0
115	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.1	0.0	0.5	0.0	1.6	0.0	1.5	0.0
116	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	1.6	0.0	1.0	0.5	1.0	0.0	1.0	0.0
117	0.0	0.0	3.0	3.0	0.0	0.0	2.0	2.0	2.6	0.0	2.0	0.0	2.3	0.0	1.0	0.0
118	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	2.0	0.0	1.5	0.0	2.3	0.0	1.5	0.0
119	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.7	0.0	1.0	0.0	1.6	0.0	1.5	0.0
120	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.0	0.0	2.0	1.5	2.0	0.0	1.0	0.0
121	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.2	0.0	2.0	2.0	2.3	0.0	1.5	0.0
122	0.0	0.0	3.0	3.0	0.0	0.0	2.0	3.0	2.6	0.0	2.0	2.0	2.6	0.0	1.5	0.0
123	0.0	0.0	3.0	3.0	0.0	0.0	2.0	2.0	2.5	0.0	2.0	1.5	3.0	0.0	1.5	0.0
124	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.3	0.0	1.5	1.5	2.0	0.0	1.5	0.0
125	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.2	0.0	2.0	1.5	2.6	0.0	1.0	0.0
126	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.2	0.0	1.5	1.5	2.6	0.0	1.0	0.0
127	0.0	0.0	3.0	3.0	0.0	0.0	2.0	2.0	2.3	0.0	2.0	2.5	3.0	0.0	1.5	0.0
128	0.0	0.0	3.0	2.0	0.0	0.0	0.0	1.0	1.8	0.0	1.5	1.5	2.3	0.0	1.0	0.0
129	0.0	0.0	3.0	3.0	0.0	0.0	2.0	2.0	2.7	0.0	2.0	2.0	2.6	0.0	1.5	0.0
130	0.0	0.0	3.0	3.0	0.0	0.0	2.0	2.0	2.3	0.0	2.0	2.0	2.6	0.0	2.0	0.0
131	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.1	0.0	1.5	1.5	1.6	0.0	1.0	0.0
132	0.0	0.0	3.0	2.0	0.0	0.0	0.0	3.0	2.2	0.0	2.0	1.5	2.3	0.0	1.0	0.0
133	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	2.1	0.0	1.0	1.5	2.0	0.0	1.5	0.0
134	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.3	0.0	1.5	1.5	2.0	0.0	1.5	0.0
135	0.0	0.0	3.0	2.0	0.0	0.0	0.0	1.0	1.6	0.0	1.0	0.5	2.0	0.0	1.5	0.0

PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	29
OBJ NO.																
136	0.0	0.0	3.0	2.0	0.0	0.0	1.0	3.0	2.0	0.0	1.5	1.0	2.6	0.0	1.5	0.0
137	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.2	0.0	1.0	2.0	2.6	0.0	1.5	0.0
138	0.0	0.0	3.0	2.0	0.0	0.0	0.0	1.0	2.1	0.0	1.0	1.5	2.6	0.0	1.0	0.0
139	0.0	0.0	3.0	2.0	0.0	0.0	0.0	1.0	2.1	0.0	1.0	2.0	2.6	0.0	1.5	0.0
140	0.0	0.0	3.0	2.0	0.0	0.0	1.0	1.0	2.2	0.0	1.0	2.5	2.6	0.0	1.5	0.0
141	0.0	0.0	3.0	3.0	2.0	0.0	3.0	2.0	2.5	0.0	2.0	2.0	2.6	0.0	1.0	0.0
142	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	2.3	0.0	1.5	2.5	2.6	0.0	1.5	0.0
143	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	0.0	2.0	2.0	3.0	0.0	1.0	0.0
144	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.5	0.0	2.0	2.0	3.0	0.0	1.0	0.0
145	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	2.5	0.0	1.5	2.0	3.0	0.0	1.0	0.0
146	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	0.0	2.0	0.5	2.3	0.0	1.0	0.0
147	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.6	0.0	2.0	2.5	2.6	0.0	1.0	0.0
148	0.0	0.0	3.0	3.0	0.0	0.0	1.0	2.0	2.6	0.0	2.0	2.5	2.6	0.0	1.0	0.0
149	0.0	0.0	3.0	3.0	2.0	0.0	1.0	2.0	2.1	0.0	2.0	1.5	3.0	0.0	1.0	0.5
150	0.0	0.0	3.0	3.0	0.0	0.0	1.0	3.0	2.2	0.0	2.0	0.5	3.0	0.0	1.0	0.5
151	0.0	0.0	3.0	3.0	0.0	0.0	2.0	3.0	2.2	0.0	2.0	1.5	3.0	0.0	1.0	0.5
152	0.0	0.0	3.0	3.0	2.0	0.0	1.0	3.0	2.3	0.0	2.0	1.5	2.6	0.0	1.5	0.5
153	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.0	0.0	1.5	1.5	2.6	0.0	1.5	0.2
154	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.5	1.5	2.5	1.5	3.0	0.0	2.0	0.2
155	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.5	0.0	2.0	1.5	3.0	0.0	1.5	0.0
156	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.3	0.0	1.0	1.5	2.6	0.0	1.5	0.0
157	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.6	1.5	3.0	1.5	3.0	0.0	2.5	0.5
158	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.5	0.0	2.5	1.5	3.0	0.0	2.5	0.0
159	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.3	0.0	2.0	1.5	3.0	0.0	1.5	0.0
160	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.2	0.0	1.5	1.5	2.6	0.0	1.5	0.0
161	0.0	0.0	3.0	3.0	0.0	0.0	2.0	3.0	2.3	1.5	2.0	1.5	2.6	0.0	1.5	0.0
162	0.0	0.0	3.0	3.0	0.0	0.0	0.0	2.0	2.0	0.0	1.5	0.5	2.6	0.0	1.5	0.0
163	0.0	0.0	3.0	3.0	0.0	0.0	1.0	2.0	2.5	0.0	1.5	1.5	2.3	0.0	1.5	0.0
164	0.0	0.0	3.0	3.0	0.0	0.0	0.0	3.0	2.2	0.0	2.0	1.5	2.6	0.0	1.5	0.0
165	0.0	0.0	3.0	3.0	2.0	0.0	3.0	3.0	2.7	1.5	2.0	1.5	3.0	0.0	2.0	0.2
166	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	2.0	1.5	3.0	0.0	2.0	0.2
167	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.7	1.5	2.5	1.5	3.0	0.0	2.0	0.2
168	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0	2.2	1.5	2.0	1.0	3.0	0.0	2.0	0.2
169	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	2.8	0.0	2.5	0.0	3.0	0.0	1.5	0.2
170	0.0	0.0	3.0	2.0	0.0	0.0	2.0	2.0	2.3	0.0	2.5	1.5	3.0	0.0	2.0	0.0

```
        PRO    3    6   10   12   13   15   17   18   19   21   22   23   24   25   27   29

OBJ
NO.
171          0.0  0.0  3.0  3.0  0.0  0.0  3.0  3.0  3.0  0.0  2.5  1.5  3.0  0.0  2.0  0.0
172          0.0  0.0  3.0  3.0  0.0  0.0  2.0  2.0  2.5  0.0  2.5  1.5  3.0  0.0  2.0  0.0
173          0.0  0.0  3.0  3.0  0.0  0.0  3.0  3.0  2.6  0.0  2.5  1.5  3.0  0.0  2.0  0.0

174          0.0  0.0  3.0  3.0  0.0  0.0  2.0  3.0  2.6  0.0  2.5  1.5  3.0  0.0  2.0  0.0
```

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

PRO \ OBJ NO.	CHEMISTRY 30	31	32	MEAN PROGRAM VALUES
1	3.0	2.7	2.5	2.7
2	3.0	2.7	2.5	2.6
3	3.0	2.7	2.5	2.6
4	3.0	2.7	2.5	2.6
5	3.0	2.7	2.5	2.6
6	3.0	2.7	2.5	2.4
7	3.0	2.7	2.0	2.2
8	3.0	3.0	2.0	2.3
9	1.5	2.7	1.5	2.5
10	1.0	2.2	1.0	2.3
11	2.0	2.7	1.5	2.4
12	2.5	2.5	2.0	2.0
13	2.5	2.7	1.5	2.4
14	1.0	1.7	1.0	1.6
15	1.0	1.7	1.0	1.6
16	1.0	1.7	1.5	1.6
17	1.0	1.7	1.0	1.7
18	1.0	2.0	1.0	1.7
19	1.0	1.7	1.0	1.7
20	2.0	2.0	1.5	2.2
21	2.0	2.0	1.0	1.7
22	2.0	2.2	1.0	1.7
23	1.0	1.7	1.0	1.8
24	1.0	1.7	1.0	1.9
25	1.0	2.0	1.5	2.2
26	1.0	2.0	1.5	2.1
27	1.0	2.0	1.5	1.8
28	1.5	2.5	1.5	2.1
29	3.0	3.0	2.0	2.5

OBJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
30	2.0	2.5	1.0	2.2
31	2.5	2.7	1.5	2.3
32	2.5	2.7	2.0	2.4
33	2.5	2.7	1.5	2.3
34	2.0	2.0	2.0	2.1
35	1.0	1.7	2.0	1.7
36	1.0	1.7	1.5	1.7
37	1.0	2.0	1.0	1.6
38	1.0	1.7	1.0	1.6
39	0.5	1.7	1.5	1.4
40	1.0	2.0	2.0	1.6
41	1.0	2.0	1.5	2.3
42	1.0	2.0	1.5	2.1
44	1.0	2.0	1.5	2.3
45	1.0	2.0	1.0	2.2
46	1.0	2.0	1.0	2.2
47	1.0	2.0	1.0	1.9
48	1.0	2.0	1.0	2.2
49	1.0	2.0	1.5	2.6
50	2.0	2.5	1.5	2.6
51	1.0	2.2	1.5	2.3
52	1.0	2.2	1.0	2.2
53	1.0	2.2	1.0	2.1
54	0.5	1.2	1.5	1.7
55	0.5	1.7	1.0	1.7
56	0.5	1.7	1.0	1.7
57	2.5	2.5	1.5	2.1
58	3.0	2.7	3.0	2.1
59	3.0	2.7	2.5	2.1
60	3.0	3.0	2.0	2.1
61	3.0	3.0	3.0	1.8
62	3.0	3.0	2.5	1.9
63	3.0	3.0	3.0	2.3

PRO OBJ NO.	30	31	32	MEAN PROGRAM VALUES
64	3.0	2.7	3.0	1.6
65	2.0	2.2	2.5	2.7
66	2.0	2.5	2.0	2.2
67	2.0	2.0	2.0	1.7
69	2.0	2.0	1.5	2.4
70	2.0	2.0	2.5	2.1
71	2.0	2.0	2.0	2.2
72	1.0	1.5	2.0	2.2
73	1.0	1.5	1.5	2.1
74	1.5	1.7	2.0	2.6
75	1.0	2.0	2.0	2.6
76	1.0	2.0	1.5	2.1
77	1.0	1.7	1.5	2.2
78	1.0	2.0	1.5	2.1
79	1.0	1.7	1.0	2.2
80	1.0	2.0	1.0	2.2
81	1.5	2.5	2.5	2.3
82	1.5	2.5	2.5	2.2
83	1.0	2.2	2.5	2.3
84	1.0	2.2	2.5	2.3
85	2.5	3.0	2.5	2.5
86	2.5	3.0	2.5	2.5
87	1.5	2.2	1.0	2.2
88	2.5	2.2	1.5	2.2
89	1.0	1.7	1.5	2.2
90	1.5	2.5	2.0	2.4
91	1.5	2.5	1.5	2.0
92	3.0	3.0	3.0	2.4
93	0.5	2.0	1.5	2.4
94	0.5	2.0	1.5	1.9
95	0.5	1.7	1.5	2.0
96	0.0	1.5	1.5	2.0
97	0.0	1.5	1.5	1.8
98	0.5	2.0	1.5	2.3
99	0.0	1.7	1.5	1.7

OBJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
100	0.0	1.7	1.5	1.6
101	0.0	1.7	1.5	1.6
102	0.5	1.7	2.0	1.7
103	0.5	1.7	2.0	1.6
104	0.5	1.7	1.5	1.4
106	0.5	1.7	1.5	1.4
107	0.5	1.7	2.0	1.5
108	0.5	1.7	1.5	1.3
109	0.5	1.7	1.5	1.5
110	0.5	1.5	1.5	1.5
111	0.0	1.7	1.5	1.5
112	0.5	1.7	1.5	1.6
113	0.5	1.5	2.0	2.2
114	0.5	1.7	1.5	1.8
115	0.5	1.7	1.5	1.9
116	0.5	1.5	1.0	1.4
117	0.5	1.5	1.0	2.1
118	0.5	1.2	1.5	1.8
119	0.5	1.2	1.5	1.6
120	0.5	1.5	1.5	1.8
121	0.5	1.5	1.5	2.0
122	0.5	1.5	1.5	2.0
123	0.5	1.7	1.5	2.2
124	0.5	1.5	1.5	2.0
125	0.5	1.5	1.5	1.9
126	0.5	1.5	1.5	1.9
127	0.5	1.7	1.0	2.2
128	0.5	1.7	1.0	1.7
129	0.5	2.0	2.0	2.3
130	0.5	2.0	2.0	2.2
131	0.5	2.0	1.5	1.8
132	0.5	1.7	1.5	1.9
133	0.5	1.7	1.5	1.8
134	0.5	2.0	1.0	2.0
135	1.0	1.7	1.0	1.4

OBJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
136	0.5	2.0	1.5	1.9
137	0.5	2.0	1.5	2.1
138	0.5	2.0	2.0	1.8
139	0.5	2.0	1.0	1.9
140	0.5	2.0	1.5	1.9
141	0.5	2.0	1.5	2.2
142	0.5	2.0	1.5	2.1
143	0.5	2.2	1.5	2.3
144	0.5	2.0	1.5	2.2
145	0.5	2.0	1.5	2.1
146	0.5	2.0	1.0	2.2
147	1.0	2.5	1.5	2.2
148	0.5	2.0	1.5	2.2
149	0.5	1.7	1.5	2.1
150	0.5	1.7	2.0	2.1
151	0.5	1.7	2.0	2.1
152	0.5	1.5	2.0	2.3
153	0.5	1.7	1.5	2.0
154	1.0	2.2	2.0	2.3
155	0.5	2.0	2.0	2.2
156	0.5	1.7	1.0	2.1
157	0.5	1.7	2.5	2.4
158	0.5	2.0	2.5	2.4
159	0.5	1.7	1.5	2.2
160	0.5	1.7	1.5	2.1
161	0.5	2.0	2.0	2.2
162	0.5	2.0	1.5	1.9
163	0.5	2.0	1.5	2.1
164	0.5	2.0	1.5	2.1
165	1.5	2.2	3.0	2.6
166	1.0	2.0	3.0	2.4
167	1.0	2.0	3.0	2.4
168	1.0	2.0	2.0	2.2
169	0.5	2.0	2.0	2.4
170	2.0	2.7	2.5	2.2

```
     PRO    30    31    32
OBJ
NO.
171         2.5   3.0   3.0
172         1.5   2.0   3.0
173         3.0   2.5   3.0

174         1.5   2.2   3.0
```

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES
0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

INTERPERSONAL RELATIONSHIPS

OBJ NO. \ PRO	3	5	6	10	12	13	15	17	19	21	22	23	24	25	27	28
1	0.0	3.0	2.0	3.0	2.0	3.0	2.0	1.0	1.5	2.3	3.0	2.5	3.0	1.0	2.5	3.0
2	0.0	2.0	3.0	3.0	1.0	3.0	2.0	1.0	1.1	1.3	3.0	1.5	2.5	2.0	2.0	3.0
3	0.0	3.0	3.0	3.0	2.0	0.0	2.0	1.0	1.5	2.3	3.0	3.0	3.0	2.0	2.5	3.0
4	0.0	3.0	3.0	3.0	2.0	0.0	3.0	1.0	1.5	2.3	3.0	2.5	2.5	2.0	2.5	3.0
5	0.0	3.0	3.0	3.0	2.0	0.0	3.0	1.0	1.4	2.3	3.0	3.0	3.0	3.0	2.5	3.0
6	0.0	3.0	3.0	3.0	1.0	0.0	3.0	1.0	1.5	2.6	2.5	3.0	2.5	3.0	2.5	3.0
7	0.0	3.0	3.0	3.0	1.0	0.0	3.0	1.0	1.0	2.3	2.5	2.5	2.5	2.0	2.0	3.0
8	0.0	3.0	3.0	3.0	2.0	0.0	2.0	2.0	1.1	2.3	3.0	2.5	3.0	2.0	2.5	3.0
9	0.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.0	2.6	3.0	3.0	3.0	2.0	2.5	3.0
10	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	1.1	2.6	2.5	3.0	3.0	2.0	2.5	3.0
11	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	2.5	3.0	3.0	2.0	1.5	3.0	2.5	3.0
12	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	2.5	3.0	3.0	3.0	1.5	2.0	2.5	3.0
13	0.0	3.0	3.0	3.0	2.0	3.0	3.0	2.0	2.1	2.6	3.0	3.0	3.0	3.0	3.0	3.0
14	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	2.0	2.6	3.0	2.5	3.0	3.0	3.0	3.0
15	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	2.2	3.0	3.0	3.0	2.5	3.0	3.0	3.0
16	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	1.5	3.0	2.5	3.0	2.0	3.0	2.5	3.0
17	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	2.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0
18	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	2.4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
19	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	1.8	3.0	3.0	3.0	3.0	3.0	3.0	3.0
20	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	1.7	2.6	3.0	3.0	3.0	3.0	2.5	3.0
21	0.0	3.0	3.0	3.0	2.0	0.0	3.0	2.0	2.1	2.6	3.0	2.5	3.0	3.0	2.5	3.0
22	0.0	3.0	3.0	3.0	3.0	0.0	3.0	2.0	2.1	2.6	3.0	2.5	3.0	3.0	2.5	3.0
23	0.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	2.5	3.0	2.5	2.0	2.5	3.0
24	0.0	3.0	3.0	3.0	2.0	0.0	3.0	3.0	2.1	3.0	2.5	3.0	3.0	3.0	2.5	3.0
25	0.0	3.0	3.0	3.0	2.0	0.0	2.0	3.0	1.8	3.0	3.0	3.0	3.0	3.0	2.5	3.0
26	0.0	3.0	3.0	3.0	2.0	0.0	2.0	3.0	2.1	1.6	3.0	3.0	2.5	2.0	2.5	3.0
27	0.0	3.0	3.0	3.0	2.0	0.0	2.0	2.0	1.7	2.6	3.0	3.0	2.5	2.0	2.5	3.0
28	0.0	3.0	3.0	3.0	2.0	0.0	2.0	2.0	1.5	3.0	3.0	3.0	2.5	2.0	2.5	3.0
29	0.0	3.0	3.0	3.0	2.0	0.0	2.0	2.0	1.4	2.6	3.0	3.0	2.5	2.0	2.5	3.0

```
       PRO   3    5    6   10   12   13   15   17   19   21   22   23   24   25   27   28
OBJ
NO.
 30        0.0  3.0  3.0  3.0  2.0  0.0  3.0  3.0  1.5  2.6  2.5  3.0  2.5  2.0  2.5  3.0
 31        0.0  3.0  3.0  3.0  2.0  0.0  3.0  3.0  1.5  2.6  2.5  3.0  2.5  2.0  2.5  3.0
 32        0.0  3.0  3.0  3.0  2.0  0.0  3.0  2.0  1.5  2.0  2.5  3.0  2.5  2.0  2.5  3.0

 33        0.0  3.0  3.0  3.0  2.0  0.0  3.0  2.0  1.5  1.6  2.5  2.5  3.0  2.0  2.5  3.0
 34        0.0  3.0  3.0  3.0  3.0  0.0  3.0  2.0  1.7  1.3  2.5  3.0  3.0  1.0  2.5  3.0
 35        0.0  3.0  3.0  3.0  3.0  0.0  3.0  2.0  1.5  1.6  2.5  2.5  2.5  1.0  2.5  3.0
 36        0.0  3.0  3.0  3.0  3.0  0.0  3.0  2.0  1.4  2.3  2.5  3.0  3.0  1.0  2.5  3.0
 37        0.0  3.0  3.0  3.0  3.0  0.0  3.0  2.0  1.4  2.0  2.5  3.0  3.0  1.0  2.5  3.0
 38        0.0  3.0  3.0  3.0  3.0  0.0  3.0  3.0  2.4  2.6  2.5  3.0  3.0  1.0  2.5  3.0
```

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

INTERPERSONAL RELATIONSHIPS

OBJ NO. \ PRO	29	30	31	32	MEAN PROGRAM VALUES
1	1.0	1.5	1.3	0.5	1.9
2	0.4	1.5	1.3	0.0	1.6
3	1.2	1.5	1.3	1.0	1.9
4	1.6	1.5	1.3	1.0	2.0
5	0.8	1.5	1.3	0.5	1.9
6	0.8	2.0	2.0	1.0	1.9
7	0.4	2.0	2.0	0.5	1.7
8	1.2	2.0	1.6	1.0	1.8
9	1.8	1.5	2.0	1.0	2.3
10	1.0	1.5	2.0	0.5	1.9
11	1.2	1.5	2.3	1.5	2.2
12	1.4	1.5	2.3	1.5	2.3
13	2.0	1.5	2.3	1.0	2.5
14	1.4	2.0	2.0	1.0	2.2
15	1.8	1.5	2.3	1.5	2.3
16	1.0	2.0	2.3	1.0	2.0
17	2.8	2.0	2.3	1.5	2.5
18	2.8	2.0	2.3	1.5	2.5
19	2.2	2.0	2.3	1.0	2.4
20	2.0	2.0	2.0	1.0	2.2
21	1.6	2.0	2.3	1.5	2.2
22	1.6	2.0	2.3	1.0	2.2
23	1.6	2.0	2.3	0.5	2.3
24	2.4	2.0	2.3	1.5	2.4
25	2.0	2.0	2.3	0.5	2.3
26	1.4	2.0	2.3	0.5	2.1
27	1.4	2.0	1.6	0.5	2.0
28	1.2	2.0	1.3	0.0	2.0
29	0.6	2.0	1.3	0.0	1.9

OBJ NO.	PRO 29	30	31	32	MEAN PROGRAM VALUES
30	1.2	2.0	1.6	0.5	2.0
31	1.0	2.0	1.6	0.5	1.9
32	1.0	2.0	1.6	0.5	1.9
33	0.6	2.0	1.6	0.5	1.8
34	1.4	1.5	2.0	0.5	2.0
35	1.2	1.5	2.0	0.5	1.9
36	1.4	1.5	2.3	0.5	2.0
37	1.2	1.5	2.3	0.5	2.0
38	2.2	1.5	2.3	1.0	2.4

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

MICROBIOLOGY

OBJ NO. \ PRO	3	6	10	12	13	15	17	18	19	21	22	23	24	25	27	28
1	0.0	0.0	3.0	2.0	3.0	0.0	3.0	2.0	2.7	0.0	2.0	1.0	1.0	2.0	1.0	0.0
2	0.0	0.0	3.0	2.0	0.0	0.0	3.0	2.0	3.0	0.0	2.0	1.0	1.3	2.0	1.0	0.0
3	0.0	0.0	3.0	2.0	0.0	0.0	3.0	2.0	2.5	0.0	2.0	1.5	1.3	2.0	0.5	0.0
4	0.0	0.0	3.0	2.0	3.0	0.0	3.0	3.0	2.5	0.0	2.0	2.0	1.6	2.0	0.5	0.0
5	0.0	0.0	3.0	2.0	3.0	0.0	3.0	3.0	2.8	0.0	3.0	0.0	1.3	2.0	0.5	0.0
6	0.0	0.0	3.0	2.0	0.0	0.0	2.0	3.0	2.5	0.0	2.0	0.0	1.0	1.0	0.5	0.0
7	0.0	0.0	3.0	3.0	1.0	0.0	3.0	3.0	2.4	1.0	3.0	3.0	1.6	1.0	1.0	0.0
8	0.0	0.0	3.0	3.0	0.0	0.0	3.0	2.0	2.5	0.0	2.5	3.0	1.6	2.0	1.0	0.0
10	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	2.8	1.0	2.5	3.0	2.0	3.0	1.0	0.0
11	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	2.8	0.6	2.5	2.0	2.0	3.0	0.5	0.0
13	0.0	0.0	3.0	2.0	0.0	0.0	0.0	2.0	1.4	0.0	2.0	1.0	0.6	2.0	0.5	0.0
14	0.0	0.0	3.0	2.0	0.0	0.0	0.0	3.0	1.8	0.0	2.0	1.5	1.0	1.0	0.5	0.0
15	0.0	0.0	3.0	2.0	0.0	0.0	1.0	2.0	2.1	0.0	2.0	1.5	1.0	1.0	0.5	0.0
16	0.0	0.0	3.0	2.0	2.0	0.0	3.0	2.0	2.5	0.0	2.0	2.5	1.3	2.0	0.5	0.0
17	0.0	0.0	3.0	1.0	2.0	0.0	3.0	2.0	2.4	0.0	2.0	0.5	1.6	2.0	0.5	0.0
18	0.0	0.0	3.0	2.0	0.0	0.0	3.0	3.0	3.0	0.3	2.0	0.5	1.3	1.0	0.5	0.0
19	0.0	0.0	3.0	1.0	0.0	0.0	3.0	3.0	3.0	0.3	2.0	2.0	1.6	1.0	0.5	0.0
20	0.0	0.0	3.0	0.0	0.0	0.0	0.0	3.0	2.1	0.0	1.5	0.5	1.3	1.0	0.5	0.0
21	0.0	0.0	3.0	1.0	0.0	0.0	1.0	3.0	2.7	0.0	2.0	2.0	1.6	2.0	0.5	0.0
22	0.0	0.0	3.0	1.0	0.0	0.0	1.0	2.0	2.4	0.0	2.0	2.5	1.3	2.0	0.5	0.0
25	0.0	0.0	3.0	2.0	3.0	0.0	2.0	2.0	2.5	0.3	2.0	2.0	1.0	2.0	0.5	0.0
29	0.0	0.0	3.0	3.0	3.0	0.0	2.0	3.0	2.8	0.6	2.0	3.0	1.0	3.0	1.5	0.0
30	0.0	1.0	3.0	3.0	0.0	0.0	2.0	3.0	2.1	1.0	2.0	3.0	1.3	3.0	1.0	0.0

```
      PRO    3    6   10   12   13   15   17   18   19   21   22   23   24   25   27   28

   OBJ
   NO.
    31     0.0  1.0  3.0  1.0  0.0  0.0  2.0  3.0  2.4  0.0  2.0  2.0  1.0  3.0  1.0  0.0
    32     0.0  1.0  3.0  1.0  0.0  0.0  2.0  3.0  2.5  1.0  2.0  2.5  1.3  3.0  1.0  0.0
    33     0.0  1.0  3.0  1.0  0.0  0.0  1.0  2.0  2.5  1.0  2.5  3.0  1.6  3.0  1.5  0.0
    34     0.0  1.0  3.0  3.0  0.0  0.0  1.0  2.0  2.4  1.0  2.5  3.0  1.6  2.0  1.0  0.0
    37     0.0  1.0  3.0  2.0  3.0  0.0  2.0  3.0  2.5  0.0  2.0  3.0  1.0  2.0  1.0  0.0
    38     0.0  1.0  3.0  1.0  0.0  0.0  2.0  2.0  2.4  0.6  2.0  3.0  1.6  2.0  1.5  0.0
    39     0.0  1.0  3.0  1.0  0.0  0.0  3.0  2.0  2.7  1.0  2.0  3.0  2.0  2.0  1.5  0.0
    43     0.0  1.0  3.0  1.0  3.0  0.0  1.0  3.0  1.5  0.0  2.0  1.5  1.3  1.0  0.5  0.0
    44     0.0  1.0  3.0  1.0  3.0  0.0  1.0  2.0  1.8  0.0  2.0  2.0  1.0  1.0  0.5  0.0
```

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

	MICROBIOLOGY				
PRO	29	30	31	32	MEAN PROGRAM VALUES
OBJ NO.					
1	0.0	2.0	1.7	1.0	2.0
2	0.0	2.0	2.2	1.0	2.1
3	0.0	2.0	2.0	1.0	2.0
4	0.0	2.0	2.0	1.0	2.3
5	0.0	1.5	1.7	1.0	2.2
6	0.0	1.5	1.7	1.0	1.8
7	0.0	3.0	2.0	1.5	2.3
8	0.0	2.0	2.0	1.0	2.3
10	0.6	2.5	3.0	2.0	2.6
11	0.6	2.5	2.7	1.5	2.5
13	0.0	2.0	2.0	1.5	1.4
14	0.0	1.5	2.0	1.5	1.7
15	0.0	1.5	2.2	1.0	1.8
16	0.0	1.5	2.2	1.5	2.2
17	0.0	1.5	1.7	1.5	1.9
18	0.0	1.0	1.2	1.0	1.9
19	0.0	1.0	1.2	1.5	2.0
20	0.0	0.5	1.0	1.0	1.5
21	0.0	1.5	2.0	1.0	2.1
22	0.3	0.5	1.2	1.5	1.8
25	0.0	2.0	2.0	1.5	2.1
29	0.0	2.0	2.7	1.5	2.6
30	0.6	2.0	2.7	1.5	2.3

OBJ NO.	PRO	29	30	31	32	MEAN PROGRAM VALUES
31		0.0	2.0	2.5	1.5	2.1
32		0.0	1.5	2.0	1.5	2.1
33		1.0	2.0	2.5	1.5	2.3
34		0.6	2.0	2.7	2.0	2.3
37		0.0	1.5	2.5	2.0	2.3
38		0.0	1.5	2.5	2.0	2.2
39		0.0	2.0	2.7	2.5	2.3
43		0.0	1.5	2.0	1.0	1.8
44		0.0	1.5	2.0	1.5	1.8

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

NUTRITION

OBJ NO. \ PRO	3	6	10	13	15	17	18	19	21	22	23	24	25	27	28	29
1	0.0	2.0	1.0	3.0	1.0	0.0	2.0	0.8	2.0	3.0	2.5	2.6	1.0	0.5	3.0	0.0
2	0.0	2.0	3.0	0.0	1.0	0.0	2.0	0.8	2.6	3.0	2.5	3.0	1.0	0.5	3.0	0.0
3	0.0	2.0	3.0	0.0	1.0	0.0	2.0	0.7	1.6	2.0	3.0	2.3	2.0	0.5	3.0	0.0
4	0.0	2.0	2.0	0.0	1.0	0.0	2.0	1.0	1.0	2.0	2.5	2.0	1.0	0.5	1.0	0.0
5	0.0	2.0	3.0	3.0	1.0	0.0	3.0	1.1	2.3	2.5	2.5	3.0	2.0	1.0	2.0	0.2
6	0.0	1.0	2.0	0.0	1.0	2.0	3.0	1.8	3.0	3.0	3.0	3.0	2.0	2.0	2.0	0.0
7	0.0	1.0	2.0	3.0	1.0	1.0	2.0	1.3	3.0	1.5	3.0	3.0	2.0	2.0	0.0	0.2
8	0.0	1.0	2.0	0.0	1.0	0.0	2.0	1.3	2.0	1.5	3.0	2.6	2.0	2.0	0.0	0.2
9	0.0	1.0	2.0	0.0	1.0	0.0	2.0	0.8	3.0	1.5	3.0	3.0	2.0	1.0	0.0	0.0
10	0.0	1.0	2.0	0.0	1.0	0.0	2.0	0.7	2.3	1.5	2.5	3.0	2.0	1.0	0.0	0.0
11	0.0	1.0	2.0	0.0	1.0	0.0	2.0	0.8	2.0	1.5	2.5	3.0	1.0	1.0	0.0	0.0
12	0.0	1.0	2.0	0.0	1.0	1.0	2.0	1.6	3.0	1.5	3.0	3.0	2.0	1.5	0.0	0.0
13	0.0	1.0	2.0	0.0	1.0	0.0	2.0	0.7	2.3	1.5	2.5	3.0	1.0	0.5	0.0	0.0
14	0.0	1.0	2.0	0.0	1.0	2.0	3.0	1.3	0.6	1.5	2.5	3.0	1.0	1.0	0.0	0.0
15	0.0	1.0	2.0	0.0	1.0	1.0	3.0	1.0	3.0	1.5	3.0	3.0	2.0	1.0	0.0	0.0
16	0.0	1.0	2.0	3.0	1.0	0.0	2.0	0.7	2.0	1.5	2.5	2.6	1.0	0.5	0.0	0.0
17	0.0	1.0	2.0	0.0	1.0	0.0	2.0	1.1	3.0	1.5	3.0	2.6	1.0	0.5	0.0	0.0
18	0.0	1.0	2.0	0.0	1.0	0.0	2.0	1.2	3.0	3.0	3.0	2.6	1.0	0.5	0.0	0.0
19	0.0	1.0	2.0	0.0	1.0	0.0	2.0	0.7	3.0	2.0	2.5	3.0	1.0	0.5	0.0	0.0
20	0.0	1.0	2.0	0.0	1.0	0.0	2.0	1.0	2.3	2.0	2.5	3.0	2.0	0.5	0.0	0.0
21	0.0	2.0	3.0	0.0	1.0	0.0	2.0	0.3	3.0	2.5	3.0	3.0	2.0	0.5	0.0	0.0
22	0.0	1.0	3.0	0.0	1.0	0.0	2.0	0.3	2.0	2.5	3.0	3.0	2.0	0.5	0.0	0.0
23	0.0	1.0	3.0	0.0	1.0	0.0	1.0	0.2	2.3	1.5	2.5	3.0	1.0	0.5	0.0	0.0
24	0.0	2.0	3.0	0.0	1.0	0.0	1.0	0.2	2.0	2.0	2.5	2.6	1.0	0.5	0.0	0.0
25	0.0	1.0	3.0	0.0	1.0	0.0	1.0	0.3	2.0	2.0	2.0	2.6	1.0	0.5	0.0	0.0
26	0.0	2.0	3.0	0.0	1.0	0.0	1.0	0.6	2.0	1.5	1.5	2.3	0.0	0.5	0.0	0.0
27	0.0	2.0	1.0	0.0	2.0	0.0	1.0	0.5	2.3	2.0	2.5	2.3	1.0	0.5	0.0	0.0
28	0.0	1.0	2.0	0.0	2.0	0.0	2.0	0.7	1.6	2.0	2.5	2.3	1.0	0.5	0.0	0.0
29	0.0	1.0	2.0	0.0	2.0	0.0	2.0	0.7	2.0	2.0	2.0	2.6	1.0	0.5	0.0	0.0

```
      PRO    3    6   10   13   15   17   18   19   21   22   23   24   25   27   28   29

OBJ
NO.
 31        0.0  1.0  2.0  0.0  2.0  0.0  1.0  0.8  2.6  2.0  2.5  3.0  1.0  0.5  0.0  0.0
 32        0.0  1.0  2.0  0.0  2.0  0.0  1.0  0.8  1.6  2.0  2.5  3.0  1.0  0.5  0.0  0.0
 33        0.0  1.0  3.0  3.0  1.0  0.0  1.0  0.5  2.6  2.5  3.0  3.0  2.0  0.5  0.0  0.0
 34        0.0  1.0  3.0  0.0  1.0  0.0  2.0  0.5  3.0  2.0  3.0  3.0  2.0  0.5  0.0  0.0
 35        0.0  1.0  3.0  0.0  1.0  0.0  2.0  0.5  2.6  2.0  2.5  3.0  2.0  0.5  0.0  0.0
 36        0.0  1.0  3.0  0.0  1.0  0.0  1.0  0.5  2.6  2.0  2.5  2.6  2.0  1.0  0.0  0.0
 37        0.0  2.0  3.0  0.0  1.0  0.0  1.0  0.7  2.3  2.0  1.5  3.0  2.0  1.5  0.0  0.0
 38        0.0  1.0  2.0  0.0  1.0  0.0  2.0  0.7  2.3  2.0  2.5  2.6  2.0  1.5  0.0  0.0
 39        0.0  1.0  2.0  0.0  1.0  0.0  1.0  0.6  2.6  2.0  3.0  3.0  2.0  1.0  0.0  0.0
 40        0.0  1.0  2.0  0.0  1.0  0.0  2.0  0.3  2.6  2.5  3.0  3.0  2.0  1.0  0.0  0.2
 41        0.0  1.0  2.0  0.0  1.0  0.0  1.0  0.7  2.6  2.5  2.0  3.0  1.0  1.0  0.0  0.0
 42        0.0  2.0  2.0  0.0  1.0  0.0  1.0  0.6  2.3  2.5  2.5  2.6  2.0  1.0  0.0  0.0
 43        0.0  2.0  2.0  0.0  1.0  0.0  3.0  0.7  2.6  2.5  3.0  3.0  2.0  1.0  0.0  0.2
 44        0.0  1.0  3.0  0.0  1.0  0.0  2.0  0.6  2.3  2.5  3.0  3.0  2.0  1.0  0.0  0.0
 45        0.0  1.0  2.0  2.0  1.0  0.0  2.0  0.2  3.0  2.5  3.0  3.0  2.0  1.0  0.0  0.2
 46        0.0  2.0  3.0  3.0  2.0  0.0  1.0  0.3  2.6  2.0  3.0  2.6  1.0  0.5  0.0  0.0
 47        0.0  1.0  2.0  0.0  2.0  0.0  1.0  0.6  2.6  2.0  2.0  2.3  1.0  0.5  0.0  0.0
 48        0.0  1.0  2.0  0.0  2.0  0.0  1.0  0.5  2.6  2.0  3.0  3.0  1.0  0.5  0.0  0.0
 49        0.0  2.0  2.0  0.0  2.0  0.0  1.0  0.3  2.6  1.5  2.0  2.6  1.0  0.5  0.0  0.0
 50        0.0  2.0  3.0  0.0  2.0  0.0  1.0  0.3  1.6  0.5  2.0  2.0  1.0  0.5  0.0  0.0
```

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

	NUTRITION			
PRO	30	31	32	MEAN PROGRAM VALUES
OBJ NO.				
1	0.5	0.3	0.0	2.5
2	0.5	0.3	0.0	2.6
3	0.0	0.0	0.0	2.2
4	0.0	0.0	0.0	1.6
5	0.0	0.0	0.5	2.6
6	0.0	1.6	1.0	2.6
7	0.0	1.6	1.0	2.5
8	0.0	2.0	1.0	1.9
9	0.0	0.0	0.5	2.2
10	0.0	0.0	0.5	2.0
11	0.0	0.0	0.5	1.9
12	0.5	2.0	1.0	2.2
13	0.0	0.0	0.0	2.0
14	0.0	1.6	1.5	1.6
15	0.0	1.3	0.5	2.2
16	0.0	0.3	0.0	2.1
17	0.0	0.6	0.5	2.2
18	0.0	0.6	1.0	2.4
19	0.0	0.0	0.0	2.2
20	0.0	0.6	0.5	2.1
21	0.0	0.0	0.0	2.4
22	0.0	0.0	0.0	2.2
23	0.0	0.0	0.0	2.1
24	0.0	0.0	0.0	2.0
25	0.0	0.0	0.0	1.9
26	0.0	0.0	0.0	1.7
27	0.0	0.0	0.0	1.8
28	0.0	0.0	0.0	1.8
29	0.0	0.0	0.0	1.8

ORJ NO.	PRO 30	31	32	MEAN PROGRAM VALUES
31	0.0	0.0	0.0	2.2
32	0.0	0.0	0.0	1.9
33	0.0	0.0	0.5	2.6
34	0.0	0.0	0.0	2.4
35	0.0	0.0	0.0	2.2
36	0.0	0.0	0.0	2.2
37	0.0	1.6	0.5	2.0
38	0.0	0.6	0.0	2.0
39	0.0	0.0	0.0	2.2
40	0.0	0.6	0.5	2.3
41	0.0	0.0	0.5	2.2
42	0.0	0.6	0.0	2.1
43	0.0	1.3	0.5	2.3
44	0.0	0.6	0.0	2.3
45	0.0	0.0	0.0	2.5
46	0.0	0.0	0.0	2.5
47	0.0	0.0	0.0	1.9
48	0.0	0.0	0.0	2.2
49	0.0	0.0	0.0	1.9
50	0.0	0.0	0.0	1.5

TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

PUBLIC HEALTH AND HEALTH CARE DELIVERY

PRO	3	6	10	12	13	15	17	19	21	22	23	24	25	27	29	30
OBJ NO.																
1	0.0	3.0	3.0	1.0	2.0	2.0	1.0	0.5	1.0	2.0	1.0	2.6	2.0	1.0	0.6	0.5
2	0.0	3.0	3.0	2.0	2.0	2.0	1.0	0.4	1.0	1.5	1.0	2.3	2.0	1.0	1.0	1.0
3	0.0	3.0	3.0	2.0	0.0	2.0	1.0	0.8	1.0	2.0	1.5	2.6	2.0	1.0	0.6	1.5
4	0.0	3.0	3.0	2.0	3.0	2.0	1.0	1.0	1.3	2.0	2.0	2.6	2.0	1.0	0.8	1.0
5	0.0	3.0	3.0	1.0	0.0	2.0	1.0	1.1	1.3	2.0	2.5	3.0	3.0	1.5	1.0	1.0
6	0.0	3.0	3.0	1.0	3.0	3.0	1.0	0.7	1.0	2.0	2.0	2.6	2.0	1.0	0.4	1.0
7	0.0	3.0	3.0	1.0	2.0	3.0	1.0	1.1	1.0	1.5	1.5	2.6	2.0	1.0	1.0	1.0
8	0.0	3.0	3.0	2.0	3.0	2.0	1.0	0.5	1.0	2.0	2.0	2.6	2.0	0.5	0.4	1.0
9	0.0	3.0	3.0	2.0	3.0	2.0	1.0	0.5	1.0	2.0	2.0	3.0	2.0	0.5	0.2	1.0
10	0.0	3.0	3.0	2.0	3.0	2.0	1.0	0.5	1.0	0.5	1.5	3.0	2.0	0.5	0.4	1.0
11	0.0	2.0	3.0	1.0	3.0	2.0	1.0	1.7	1.0	2.0	2.5	3.0	2.0	1.5	0.6	1.5
12	0.0	2.0	2.0	1.0	3.0	2.0	1.0	1.8	1.3	2.0	2.0	3.0	2.0	1.0	0.4	1.5
13	0.0	2.0	2.0	1.0	3.0	2.0	1.0	1.7	1.6	2.0	2.0	3.0	2.0	1.0	0.4	1.5
14	0.0	1.0	2.0	1.0	3.0	2.0	1.0	1.8	1.6	2.0	2.5	3.0	2.0	1.0	0.8	1.5
15	0.0	1.0	2.0	1.0	3.0	2.0	1.0	1.8	1.6	2.0	2.0	3.0	2.0	1.0	0.4	1.5
16	0.0	1.0	2.0	3.0	3.0	2.0	1.0	1.8	2.0	2.0	2.5	3.0	2.0	1.5	0.8	1.5
17	0.0	1.0	2.0	3.0	3.0	2.0	1.0	1.8	2.0	2.0	2.5	3.0	2.0	1.0	0.6	1.5
18	0.0	1.0	2.0	1.0	3.0	2.0	1.0	1.8	2.0	2.0	2.5	3.0	2.0	1.0	0.2	1.5
20	0.0	1.0	2.0	1.0	3.0	2.0	1.0	1.8	2.0	2.0	2.5	3.0	2.0	1.5	0.6	1.5
21	0.0	1.0	2.0	1.0	3.0	2.0	1.0	1.8	2.0	2.0	2.5	3.0	2.0	1.0	0.2	1.0
23	0.0	1.0	2.0	1.0	3.0	2.0	2.0	2.2	1.6	2.0	2.0	3.0	2.0	1.5	0.8	1.0
24	0.0	1.0	2.0	1.0	3.0	2.0	2.0	2.2	1.6	2.0	2.5	3.0	2.0	1.5	1.2	3.0
25	0.0	2.0	2.0	0.0	3.0	2.0	2.0	2.2	1.6	2.0	2.5	3.0	2.0	1.5	0.8	1.0
26	0.0	1.0	2.0	0.0	3.0	2.0	2.0	2.2	1.6	2.0	2.0	3.0	2.0	1.5	0.8	1.0
27	0.0	1.0	2.0	1.0	0.0	2.0	2.0	2.1	1.6	2.0	3.0	3.0	2.0	1.5	1.0	1.5
28	0.0	2.0	2.0	2.0	2.0	3.0	1.0	1.7	1.6	2.0	1.5	2.3	2.0	1.5	1.0	2.0
29	0.0	2.0	3.0	1.0	3.0	3.0	1.0	1.4	2.0	2.0	2.5	3.0	2.0	1.0	0.6	1.5
30	0.0	3.0	2.0	0.0	3.0	2.0	1.0	0.8	2.0	2.0	3.0	3.0	2.0	2.5	0.6	1.5
31	0.0	3.0	3.0	2.0	3.0	3.0	2.0	0.8	1.3	2.0	2.0	2.6	1.0	1.0	0.4	1.5

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      PRO    3    6   10   12   13   15   17   19   21   22   23   24   25   27   29   30

 OBJ
 NO.
  32       0.0  3.0  3.0  1.0  0.0  3.0  1.0  0.8  1.3  2.0  2.0  3.0  1.0  1.5  0.6  1.5
  33       0.0  3.0  3.0  1.0  2.0  3.0  2.0  0.7  1.3  2.0  1.5  2.6  2.0  1.5  0.6  1.5
  34       0.0  3.0  3.0  1.0  2.0  3.0  2.0  0.4  1.3  1.5  2.0  1.6  1.0  1.0  0.6  1.0
  35       0.0  3.0  3.0  1.0  3.0  3.0  2.0  0.8  1.3  2.0  2.0  2.6  1.0  1.0  0.6  1.5
  36       0.0  3.0  3.0  2.0  2.0  3.0  0.0  0.4  1.0  1.0  1.5  2.6  1.0  1.0  0.4  1.0
  37       0.0  3.0  3.0  2.0  3.0  3.0  0.0  0.4  1.0  1.0  1.5  3.0  1.0  1.0  0.6  1.0
  38       0.0  3.0  3.0  2.0  3.0  3.0  0.0  0.4  1.0  1.0  1.5  3.0  1.0  1.0  0.6  1.0

  39       0.0  3.0  3.0  0.0  2.0  3.0  1.0  1.2  0.6  1.5  2.5  3.0  2.0  0.5  0.6  1.0
  40       0.0  3.0  3.0  0.0  2.0  3.0  1.0  1.2  0.6  2.0  2.5  2.6  2.0  1.0  0.8  1.0
  41       0.0  3.0  2.0  1.0  2.0  3.0  2.0  0.8  0.6  2.0  1.0  2.6  1.0  1.0  1.0  1.0
  42       0.0  2.0  2.0  1.0  0.0  3.0  1.0  0.4  0.3  2.0  1.5  2.3  1.0  1.0  0.8  1.0
  43       0.0  3.0  3.0  1.0  3.0  3.0  1.0  0.8  0.6  1.0  1.5  3.0  2.0  1.0  1.0  1.0
  44       0.0  3.0  2.0  1.0  3.0  3.0  1.0  1.0  0.6  2.0  1.5  3.0  2.0  1.0  0.8  1.0
  45       0.0  3.0  0.0  2.0  3.0  2.0  2.0  1.1  0.6  1.0  1.5  3.0  0.0  1.5  0.8  1.0

  46       0.0  3.0  0.0  0.0  2.0  3.0  1.0  0.7  0.6  1.5  1.0  3.0  0.0  0.5  1.0  1.0
  47       0.0  3.0  0.0  2.0  3.0  3.0  1.0  1.0  0.6  2.0  1.0  3.0  0.0  1.5  1.0  1.0
  48       0.0  3.0  0.0  1.0  2.0  3.0  1.0  1.0  0.3  2.0  1.5  2.6  0.0  0.5  0.6  1.0
  49       0.0  3.0  2.0  1.0  3.0  3.0  1.0  0.8  0.3  1.5  2.0  2.6  2.0  0.5  1.0  1.0
  50       0.0  3.0  2.0  1.0  2.0  3.0  1.0  1.0  0.3  1.5  1.5  2.3  2.0  0.5  1.0  1.0
  51       0.0  3.0  3.0  2.0  3.0  3.0  2.0  1.1  0.3  1.5  1.5  2.3  2.0  1.0  1.4  1.0
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TABLE 2 MEAN DEGREE OF IMPORTANCE EVALUATIONS

RESPONSES 0 NOT IMPORTANT
1 SLIGHTLY IMPORTANT
2 IMPORTANT
3 VERY IMPORTANT

PUBLIC HEALTH AND HEALTH CARE DELIVERY

PR OBJ NO.	31	32	MEAN PROGRAM VALUES
1	0.6	0.0	2.5
2	1.0	0.0	2.4
3	1.3	0.0	2.2
4	1.3	0.0	2.6
5	1.6	0.5	2.5
6	1.0	0.0	2.8
7	1.0	0.0	2.6
8	1.0	0.0	2.6
9	1.0	0.0	2.8
10	1.0	0.0	2.8
11	2.0	1.0	2.6
12	2.0	0.5	2.5
13	2.0	0.5	2.5
14	2.0	0.5	2.4
15	2.0	0.5	2.4
16	1.6	0.5	2.4
17	1.6	0.5	2.4
18	1.6	0.5	2.4
20	1.6	1.0	2.4
21	1.0	0.5	2.4
23	1.6	1.0	2.4
24	3.0	1.5	2.4
25	1.0	0.5	2.5
26	1.6	0.5	2.4
27	2.0	1.0	2.0
28	2.0	0.0	2.2
29	1.3	0.5	2.8
30	1.6	0.5	2.6
31	0.6	0.0	2.6

OBJ NO.	PRO 31	32	MEAN PROGRAM VALUES
32	1.3	0.0	
33	1.3	0.0	
34	1.3	0.0	
35	1.3	0.5	
36	0.3	0.0	
37	0.3	0.0	
38	0.3	0.0	
39	1.3	0.0	
40	1.3	0.0	
41	1.6	0.0	
42	1.3	0.0	
43	1.3	0.0	
44	1.6	0.0	
45	1.6	0.0	
46	0.6	0.5	
47	1.3	0.0	
48	1.6	0.0	
49	1.3	0.0	
50	1.3	0.0	
51	1.0	0.5	

APPENDIX K

SUGGESTED CORE CURRICULAR IMPLEMENTATION BY TYPE OF PROGRAM

TYPE OF PROGRAM	PRIMARY CORE CURRICULUM			SECONDARY CORE CURRICULUM					
	I	II	III	A. & P.	Chem.	I.R.	Micro.	Nutrition	P.H. &H.C.D
Child Care Worker Technician	X	?	?			X		?	
Dental Assistant	X	?				X			
Dental Hygiene	X	X	?	X	X	X	X	X	X
Dental Technician	X	?							
Dietetic Technician	X	X	?			X	X	X	
Dietetics/Nutrition	X	X	?	X	X	?	X	X	
Health & Hospital Services Adm.	X	?				X			X
Adm. of Long Term Health Care Fac.	X					X			?
Medical Assistant	X	X	X	?		X	?	?	
Medical Secretary	X	?				X			
Certified Laboratory Assistant	X	X		?	?		?		
Medical Laboratory Technician	X	X	?	?	X	?	X		
Medical Technology	X	X	?	X	X	X	X		?
Licensed Practical Nurse	X	X	X			X		X	?
Associate Degree, R.N.	X	X	X	X	?	X	X	X	?
Diploma, R.N.	X	X	X	X	?	X	X	X	?
Baccalaureate Degree, R.N.	X	X	X	X	X	X	X	X	X

X = recommended (may even require more than this), ? = uncertain (possibly some or all should be offered), blank = not recommended

TYPE OF PROGRAM	PRIMARY CORE CURRICULUM			SECONDARY CORE CURRICULUM					
	I	II	III	A. & P.	Chem.	I.R.	Micro.	Nutrition	P.H. &H.C.D
Pharmacy	X	X	X	X	X	?	X	?	X
Physical Therapy (Pre-Clinical)	X	X	X	X	X	X	?		?
Psychiatric Technician	X	X	X	?	?	X	?	X	?
Public Health Science	X	X	X	?	X	X	X	X	X
Radiologic Technology	X	X	?	X	?	X			
Respiratory Therapy Technician	X	X	?	?		?	?		
Respiratory Therapy	X	X	X	X	?	X	X		
Social Services Technician	X	?				X			?
Medical Social Services	X	?				X			X
26	26X	18X, 7?	10X, 8?	10X, 6?	8X, 6?	20X, 4?	11X, 5?	9X, 3?	6X, 8?

APPENDIX L

SUGGESTED CORE CURRICULAR IMPLEMENTATION BY LENGTH OF PROGRAM

TYPE OF PROGRAM	PRIMARY CORE CURRICULUM			SECONDARY CORE CURRICULUM					
	I	II	III	A. & P.	Chem.	I.R.	Micro.	Nutrition	P.H. &H.C.D.
Approximately One-Year Programs:									
Dental Assistant	X	?				X			
Dental Technician	X	?							
Medical Assistant	X	X	X	?		X	?	?	
Medical Secretary*	X	?				X			
Certified Laboratory Assistant	X	X		?	?		?		
Licensed Practical Nurse*	X	X	X			X		X	?
Respiratory Therapy Technician	X	X	?	?		?	?		
7 programs	7X	4X, 3?	2X, 1?	3?	1?	4X, 1?	3?	1X, 1?	1?

*Also available in longer term programs.

TYPE OF PROGRAM	PRIMARY CORE CURRICULUM			SECONDARY CORE CURRICULUM					
	I	II	III	A. & P.	Chem.	I.R.	Micro.	Nutrition	P.H. &H.C.D.
Approximately Two-Year Programs:									
Child Care Worker Technician	X	?	?			X		?	
Dental Hygiene	X	X	?	X	X	X	X	X	X
Dietetic Technician	X	X	?			X	X	X	
Adm. of Long Term Health Care Fac.	X					X			?
Medical Laboratory Technician	X	X	?	?	X	?	X		
Associate Degree, R.N.	X	X	X	X	?	X	X	X	?
Psychiatric Technician	X	X	X	?	?	X	?	X	?
Radiologic Technician	X	X	?	X	?	X			
Respiratory Therapy*	X	X	X	X	?	X	X		
Social Services Technician	X	?				X			?
10 programs	10X	7X, 2?	3X, 5?	4X, 2?	2X, 4?	9X, 1?	5X, 1?	4X, 1?	1X, 4?
Approximately Three-Year Programs:									
Diploma, R.N.	X	X	X	X	?	X	X	X	?

*Also available in longer term programs.

TYPE OF PROGRAM	PRIMARY CORE CURRICULUM			SECONDARY CORE CURRICULUM					
	I	II	III	A. & P.	Chem.	I.R.	Micro.	Nutrition	P.H. &H.C.D.
Approximately Four-Year Programs:									
Dietetics/Nutrition	X	X	?	X	X	?	X	X	
Health & Hospital Services Adm.	X	?				X			X
Medical Technology	X	X	?	X	X	X	X		?
Baccalaureate Degree, R.N.	X	X	X	X	X	X	X	X	X
Pharmacy	X	X	X	X	X	?	X	?	X
Physical Therapy (Pre-Clinical)	X	X	X	X	X	X	?		?
Public Health Science	X	X	X	?	X	X	X	X	X
Medical Social Services	X	?				X			X
8 programs	8X	6X, 2?	4X, 2?	5X, 1?	6X	6X, 2?	5X, 1?	3X, 1?	5X, 2?

APPENDIX M

PERCENTAGES OF PROGRAMS RECEIVING X-TYPE RECOMMENDATIONS

Percentage of programs receiving x-type recommendations.

Length of Program	Primary Core Curriculum			Secondary Core Curriculum					
	I	II	III	A.&P.	Chem.	I.R.	Micro	Nutrition	P.H. & H.C.D.
One Year	100	57	29	0	0	57	0	14	0
Two Years	100	70	30	40	20	90	50	40	10
Three Years*	100	100	100	100	0	100	100	100	0
Four Years	100	75	50	63	75	75	63	38	63

*Only one such type of program.

APPENDIX N

MAY, 1975 HEALTH MANPOWER TASK FORCE WORKSHOP PANEL PRESENTATION AND PLENARY DISCUSSION ON CORE CURRICULAR IMPLEMENTATION

PANEL PRESENTATION

The panel consisted of Clyde Brashier (Moderator), Loran Hills, John Jones, Francis Nickerson and Sharon Waltner. Following a brief introduction by Clyde Brashier, each of the other panel members spoke for five to ten minutes. Following the panel presentations, a rather lengthy and lively discussion followed. A summary of the panel presentations and discussion session follows:

Clyde Brashier: It is easier to implement the primary and secondary core curricula in new programs than in programs which have already been established. Those persons who have not attended Core Curriculum Project meetings and workshops will have more problems in implementing the core curricula than those persons who have been past participants. Some feedback I have heard from programs suggest that we ignore chemistry, and that microbiology is looking better, but it would be better to forget about it.

Whenever you develop course outlines, it is important that you shouldn't dictate what is to be done in the classroom. Most courses will go beyond what the course outlines include.

We knew there would be numerous problems when we began this project. Even back in May, 1973 we wondered whether we would be able to reconcile the theoretical with the practical aspects of the core curricula. A good communication system has been developed. There are disadvantages in implementing the core curricula, but if we successfully implement it, hopefully there will be better transferability of credits using challenge examinations.

In more and more educational programs, entrance and exit courses are being developed. Continuing education will be more easily accessible in the future.

Finally, our goal should be the development of a better health care delivery system.

Loran Hills: It seems to me at times during this workshop, that we are trying to go back to where we started three years ago. There ought to be more continuity in representatives at these meetings.

Next fall, Dakota Wesleyan will admit their first students in an x-ray technology program. There has been very little input from some programs (x-ray, for example) as far as core is concerned.

Microbiology seems fairly "skimpy". I want to stress the fact that there must be more continuity. At the same time, we know we are going to have to go back and rework some of the objectives.

Dakota Wesleyan has not implemented primary core. Many of the concepts are in other areas. We are going to try to set up courses which will accommodate M.L.T., nursing and x-ray students. In fact, we have designated an interim course where the students will visit different hospital departments, e.g., insurance, accounting, administration, laboratory, etc.

Everyone has some constraints on what they can do. We have an established curriculum, but we are making a valid effort.

Sharon Waltner: Freeman Junior College has been in existence for 75 years. I say this because much of the time when I mention I'm from Freeman Junior College I get the reaction, "oh that must be a new school, I've never heard of it before". Three years ago we started a needs study for a nursing program. The study indicated a need for such a program at Freeman Junior College, so a program proposal was prepared. This proposal was for a practical nursing program, based on the core curriculum, and was designed as a three semester program.

We started our program last year, and our curriculum included a three semester credit hour course entitled "Primary Core", a four semester credit hour anatomy and physiology course, a three semester credit hour nutrition course, a one semester credit hour course in interpersonal relationships, and a course entitled "Disaster" which included objectives from Primary Core III: Emergency Medical Care. All of these courses were based on the primary and appropriate secondary core curricula. Since then, we have learned that a one-hour course is insufficient for interpersonal relationships, and next fall this course will be expanded to a three semester credit hour course.

Difficulties we have experienced include the selection of textbooks and developing student enthusiasm for primary core. It is difficult for beginning students to understand the health care delivery system.

On the other hand, implementation of the core curriculum is advantageous in that it provides an organized system and localizes these subjects.

We are concerned about where the student goes after completing the core curriculum. We would like to assume that many of the graduates from our nursing program will go on in some area of higher education.

We are still in the working stages and are still making changes.

John Jones: I will restrict my remarks to Primary Core III: Emergency Medical Care. This course content could be taught by someone who is reasonably familiar with emergency medical care.

Currently, Emergency Medical Systems in South Dakota is sponsoring the following training courses:

- a 22 hour basic emergency care course
- a 50 hour emergency medical technician (ambulance) course
- a 9 hour hospital training course
- a STAT, Emergency Room Nursing Course

So far, it has been impossible for persons taking any of these courses to receive academic credit for them by any means. Recently, we have asked the Board of Regents to allow 3 semester credit hours of academic credit for the STAT, Emergency Room Nursing Course as a pilot program.

If a student were to take Primary Core III: Emergency Medical Care, we feel that only four additional fours of instruction would be required to enable the student to take the examination for the 22 hour basic emergency care course certificate. We would welcome contact from those institutions teaching this course in this regard.

Francis Nickerson: The mechanical problem is how to implement. Behind the mechanical problems lie the policy issues. Basically, we have two problems facing us.

1. obtaining universal cooperation, and
2. the development of a baccalaureate nursing program in the west river area.

The nurses in South Dakota are convinced of the need for a baccalaureate nursing program in the west river area. Development of new programs involves money, staff and duplication. Two questions then arise:

1. Is somebody already providing the service? (The answer for the west river area is No.)

2. Who is to provide the service, public or private institutions?

There are difficulties in resolving this issue, but there is nothing to indicate it can't be done. Beyond this issue, the relationship between higher and vocational education is a sensitive issue.

The policy problems do not seem to be unsolvable if you people, as professionals, can resolve your differences. If you do this, then we will solve the policy problems.

PLENARY DISCUSSION

Someone stated that we need to have the Core Curriculum Project staff come to our school to talk with our faculty. Clyde Brashier asked how others have dealt with the problem of intrainstitutional communications. Loran Hills responded that they have had no trouble in this regard since their administration realizes what they are trying to do. He was pleased with the benefits from their achievements in health education during the past four years. Kathryn Vigen mentioned a possible need for more Core Curriculum Project staff. She said that when she visited nursing programs in connection with the Nursing Study, people expected her to also ask them about the Core Project and their implementation plans.

One of the participants indicated they needed someone to help lead them. Another participant felt that a single core representative should be named at each institution. It was pointed out that wherever feasible, this has been done. However, the Core Curriculum Project does not have either the desire nor the authority to insure that these institutional representatives function as leaders in the real sense within the respective institutions. Nor do the Project staff feel that they can in anyway encroach into intrainstitutional matters. They are, however, happy to visit programs and institutions when invited to do so. Intrainstitutional problems and communications are the responsibility of the faculty and administration within the particular institution.

Two participants indicated that in their institutions they had been told to teach portions of the core curriculum by their administrations. It was suggested that portions of the secondary core do not fit into existing curricula.

A vocational education instructor asked why it is of benefit for a vocational student to take courses, if they can get no credit for these experiences if and when they decide to go further in their education.

One participant indicated that availability of staff is a problem in implementing core. Nevertheless, several institutions reported that they have or will be implementing primary core or portions of the secondary core.

In retrospect, it is believed that the discussion was valuable not only for the associated health and nursing instructors, but also for the Core Curriculum Project staff./